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**THE INTERNATIONAL LAW OF
OUTER SPACE**

by
Carl Q. Christol



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FOREWORD

Since the Naval War College was founded in 1884, the study of International Law has been an important part of the curriculum. From 1894 to 1900, certain lectures given on International Law and the situations studied were compiled and printed, but with a very limited distribution. Commencing in 1901, however, the first formal volume of the Naval War College's "Blue Book" series was published.

This book represents the fifty-fifth volume in the series as numbered for cataloging and reference purposes. This present volume is written by Professor Carl Q. Christol of the University of Southern California who occupied the Chair of International Law at the Naval War College during the 1962-1963 school term. It is considered that Professor Christol's book represents an excellent, informative, and comprehensive work in the developing field of space law. It should also prove to be a most valuable source of reference material in this particular area of international law.

The opinions expressed in this volume are those of the author and are not necessarily those of the United States Navy or of the Naval War College.

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PREFACE

The author of this Naval War College Blue Book is less an innovator than a synthesist of a dynamic but well-considered subject. Though the international law of outer space may seem, at first glance, to be novel or unique, in reality much careful thought has been accorded the subject during the past fifteen years. More importantly, space law is but a new segment, with variations and modifications, of an ancient discipline. Space law is a manifestation of one of law's most singular qualities, namely, a capacity to adjust to the emerging facts of a given social complex.

Today the legal and technical literature dealing with outer space is extremely vast. To begin to cope with it is no easy task. Even to run with great speed leaves the analyst with the feeling of standing still, for careful studies—representing the importance of the subject—continue to circulate at an ever-increasing rate.

The law of outer space is particularly challenging because of its interrelated legal and political characteristics. Even so, there is an important need to provide practical guidance to those whose decisions will have a bearing on national and international activities and interests. In this connection, the research for this book was essentially accomplished with materials available through 1963.

In this area many legal problems are well known and can be easily identified. Certain aspects, however, have received little attention, and are subject to prediction based upon an analysis of probable trends. In both situations, reality demands the building of a law-respecting world equipped with a set of legal principles and rules for outer space. This will contribute to the elimination of some of the world's pyramiding problems—some of which may be almost beyond the capacity of the mind of man to handle.

It is my hope that this Blue Book may serve to facilitate a rational decisional process for those confronted with grave responsibilities respecting outer space. It is not too much to assert that such decisions may affect not only the nation of the decision maker, but, in sum, the totality of man's multidimensional universe.

The author is indebted to many individuals and institutions for their assistance in making this volume a reality. I am indebted to President Norman Topping and my colleagues at the University of

Southern California for permitting me to enjoy a special leave so that I might accept appointment to the Chair of International Law at the Naval War College, 1962-1963.

I am indebted to Vice Admiral B. L. Austin, USN, and Vice Admiral C. L. Melson, USN, Presidents of the Naval War College and their staffs for facilitating my research work and for permitting me to consult broadly with experts in the field. At the Naval War College, specific mention must be made to the Extension Education Department, and especially to CDR Charles R. Davis, USN, CDR Charles E. McDowell, USN, LCDR Charles E. Waite, USN, and to LCDR Arthur J. Johns, USN, for their helpful suggestions, both as lawyers and naval officers. Additionally, the author is most grateful to the secretarial staff of the Extension Education Department, the Library staff, and members of the art branch of the Visual Aids Department.

I have been privileged to consult with a number of friends and lawyers in the course of preparing this Blue Book, and I wish to acknowledge my deep debt to them for their valuable advice and assistance, namely, Professors Gordon B. Baldwin, Richard R. Baxter, Carl M. Franklin, Albert H. Garretson, Oliver J. Lissitzyn, Myres S. McDougal, Louis B. Sohn, Quincy Wright, Mr. Abdel-Ghani of the United Nations Secretariat, the Honorable Abram Chayes, the Honorable John A. Johnson, Mr. Leonard C. Meeker, Mr. Oscar Schachter of the United Nations Secretariat, Mr. Richard Young, and from the Office of the Judge Advocate General of the Navy, RADMs Wilfred A. Hearn, William C. Mott, Robert D. Powers, and Captain Joseph B. McDevitt. I am, of course, alone responsible for all of the conclusions arrived at and for the form and style of this Blue Book.

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CHAPTER I

INTRODUCTION

A. INTERNATIONAL LAW AND OUTER SPACE

This book seeks to identify legal principles and rules influencing and governing the uses of outer space. It suggests reasonable applications of such principles and rules. It proceeds upon the basis that the international law of outer space now possesses content and scope. It recognizes that this law, in its rapidly emerging condition, is particularly influenced by political-legal dynamics.

It is not the province of this volume to provide final answers to the issues and problems analyzed. Yet, this limitation—if it is a limitation—does not invalidate the importance of understanding current approaches to the law of outer space.

In order to understand today's law of outer space it is necessary to comprehend the facts of today's social complex, including the revolutionary tempo which contributes so materially to the changes and challenges of the Twentieth Century.¹ All of the elements of the so-

¹ The past six million years of the earth's existence has been compared with a twenty-four hour day, and on such a scale all of man's notable achievements have been accomplished within much less than the last split second of the last second of the day. A similar comparison was made by President John F. Kennedy on September 13, 1962. In a talk entitled "The Space Challenge," he stated: "No man can fully grasp how far and how fast we have come, but condense, if you will, the 50,000 years of man's recorded history in a timespan of but half a century. Stated in these terms we know very little about the first 40 years, except at the end of them advanced man had learned to use the skins of animals to cover him.

"Then about 10 years ago under this standard man emerged from his cave to construct other kinds of shelter. Only 5 years ago man learned to write and use a cart with wheels.

"Christianity began less than 2 years ago. The printing press came this year and then less than two months ago, during this whole 50-year span of human history, the steam engine provided a new source of power. Newton explored the meaning of gravity.

"Last month, electric lights and telephones and automobiles and airplanes became available. Only last week did we develop penicillin and television and nuclear power.

"And now if America's new spacecraft succeeds in reaching Venus, [this was accomplished on December 14, 1962] we will have literally reached the stars before midnight tonight. This is a breathtaking pace and such a pace cannot help but create new ills as it dispels old, new ignorance, new problems, new dangers." 28 *Vital Speeches* 738 (October 1, 1962.)

cial complex have imposed highly significant and extraordinarily substantial demands upon the human species in the space age.

By the social complex I mean those forces or factors which affect mankind. They necessarily include social, cultural, religious, ethical, aesthetic, economic, political, military, scientific, technological, racial, ideological, lingual, and legal considerations. Many include important subdivisions. For example, the economic factor might be further divided to include financial, commercial, industrial, labor, agricultural, and managerial categories.

For the purposes of this study political and legal forces are of singular importance and very similar. It is the function of political forces to take into account the art of the possible. Legal forces emphasize the use of given processes in order to achieve certain socially desirable goals or purposes. Although there may not be universal agreement as to the purposes to be served by legal processes, yet there is general agreement that, whatever the law is, it is subject to enforcement—by sanctions, physical or otherwise.

It should be remembered that many of the elements of the social complex are normative in nature, that is, there is a high degree of "oughtness" in their composition. This is particularly true of religious, ethical, social, ideological, and legal forces. The latter is normative because of the impact made upon it by religious, ethical (or moral), social, and ideological demands.²

Thus, it should be understood at the outset that national and international interests in outer space must take into account the highly interrelated and complex forces which for purposes of brevity have been designated as the social complex. These forces are multidimensional in significance. They affect the important figure of this study—man—in inner space, on the surface of the globe, in the atmosphere, and in outer space. Thus, despite the new physical dimensions into which man now extends his presence and his influence, from the legal point of view the environmental dimension is not central to this analysis. The law of outer space, just as all law, is designed for man and must serve his complex needs. Man's behavior, then, is the focal point of this study.

The new tempo of mankind's existence is matched only by the novelty of man's conquest of outer space and the creative and imaginative excitement which this has generated. The proliferation of

² This has been portrayed by a former President of the American Bar Association, who has written: "The rule of law means the rule of reason under the moral standards developed by the experience of man. Traditional moral values underlie law principles. These values have their roots deep in the conscience of humanity." Rhyne, "World Peace Through Law," 3 *Student Law J.* 6 (1960).

writing flowing from lawyers and others close to centers of policy formulation has been effervescent and divergent. These factors have demonstrated the need to put into analytical—even though tentative—form a statement of the law of outer space.

It has been reported that the leading newspaper of an important North American city ran an immodest but arresting headline on October 4, 1957, proclaiming the World Series successes of its teams. Only in the inner recesses of the journal could one learn that on that historic day man's first earth-launched, artificial satellite was ranging through the fairly proximate distances of outer space. In the short intervening years outer space has become more a part of our, and, indeed, world life than even baseball.

How has this come about? And what kind of principles or rules have been devised for the participants in the outer space contest? Because it is a most important struggle it could perhaps be expected that formal rules governing man's use of outer space would by now have been stated. Only relatively modest and somewhat tentative practical legal notions have so far been attained, despite the energetic thought given to the matter of principles and rules.

The limited legal achievements may be due to the fact that outer space is indeed a more complex matter than baseball. To carry the comparison a step further it now appears that the major participants in outer space activities have been waiting to see what the pitchers have to offer and what kind of hop the ball was going to take before an earnest effort was made to agree upon applicable legal principles and the formalization of specific rules.³ The tempo of events, however, is forcing policy decisions prior to the unfolding of ultimate facts.

Moreover, as the space age develops, and as international problems respecting outer space proceed apace, the contest itself is developing some of its own norms.⁴ Thus, a new and intriguing area of customary international space law is unfolding. It relies initially, and is still based very largely, on usage or practice. Much is implicit but is bolstered by formal national declarations and international resolutions. Concurrently, there is also a limited development of space law through other and more formal processes.

The tempo of our times, largely aided and abetted by our newest scientific and technological revolution, and influenced materially by long-ranging and significantly creative efforts in science and technol-

³ See pages 119–183 for a more extended analysis of “approaches” to the development of the law of outer space.

⁴ See pages 115–175 for an analysis of the development of a customary law of outer space.

ogy, has produced demands for certain uses of outer space. Pyramiding practical demands have demonstrated a singular awareness of man's potential uses of outer space. Thus, at this time the main stream of man's expectations has been for reasonable—indeed, peaceful—uses of outer space.⁵ For, man in these tempestuous times is aware that he lives not only in the era of space but in the age of the atom. And he seeks such security in outer space as may be supplied by the application of law to such an environment.

It was in these circumstances that Lieutenant Colonel John H. Glenn, Jr., observed in 1962 following his successful space flight: "As our knowledge of the universe in which we live increases, may God grant us the wisdom and guidance to use it wisely."

Much the same has become an urgent article of faith for much of mankind. Man's predicament and his expectations have been put forward by Gerard Piel, as follows: "We have come suddenly and unprepared to the fork in the road. As each day passes we lose the power of decision and are carried into the road that leads to no future at all. We cannot avert our self-destruction unless we take up the cause of man * * * In the knowledge that confers the capacity to destroy, man has gained equally the capacity to realize his humanity * * * "⁶ It does seem clear that man's scientific and technological genius has provided him with the opportunity to eliminate human deprivations and to advance his inherent capabilities. At the same time he has developed capabilities equal to the task of destroying life and civilization as we now know it.

The challenges to the legal profession are patently real. The international lawyer with a subject as important and dynamic as this can serve many purposes. Not the least of his opportunities is the act of identifying problems. He may also offer tentative and occasionally even more definitive answers.

A lawyer in addressing himself to a task such as this one must avoid the luxury of unconsciously making basic assumptions about the substance of his subject. It should be repeated that this is particularly necessary where, as here, the political-legal qualities of the subject are so closely related.

Because of this it is well to acknowledge that the demand for and growth of a law of outer space is being substantially influenced by man's ancient quest for security, as well as by his inherent search for self-realization. The primacy of security is reflected by man's unqual-

⁵ See pages 114–118, 178–181, 263–318 for a more detailed analysis of this matter. As will be demonstrated, peaceful uses may include military uses when the latter are nonaggressive and beneficial in their employment.

⁶ Piel, *Science in the Cause of Man*, vii (1961).

ified and hopeful demand for control over outer space. Early writings on the subject of outer space have stressed man's concern lest this environment be used adversely to his earthly interests. Since this is a central factor in man's thinking, it is hardly surprising that this concern has also occupied policy planners and decision makers ever since man's space capabilities came to be more fully realized. There seems to be no doubt that this aspect of outer space will continue to occupy a nationally oriented mankind and be central to the existing world decisional process, thus controlling and influencing all other uses and thought concerning space.

On the other hand, self-realization insists that the uses of outer space be as wide indeed as all of man's vastly ranging interests, which are international as well as national in their focus. Restrictions on the use of outer space and demands for full use will have to be balanced in the white flame of competing interests.⁷ It is fair to say that the jurisprudence of interests has now arrived at outer space. The catalyst in these experiences, and indeed the balance wheel, it is submitted, will be the concept of reasonableness.

Therefore, it is one of the fundamental assumptions of the author that, through the development and clarification of a law of outer space, certain benefits will extend to mankind. If law is capable of taming or modifying power in this new environment, as it has in many others, then great benefits to man will surely obtain. There could be such results as a higher degree of international security, a broader view of the nature of reasonable uses, and such other of man's essential values, which nation-states seek to supply or encourage, as order, health, economic stability, scientific and technological advancement, an appreciation for moral and spiritual values, and the general welfare of the individual—in sum, all of the characteristics of a more enlightened age.⁸

Thus, a part of man's challenge is his capacity to learn to live with lively and multi-purposed space vehicles. In the interest of order—and perhaps of survival—he must acquire a willingness to use them reasonably. In this effort law has a traditional and principal role to play.

In addition to the identification of goals, there is the requirement that agreeable legal and scientific terminology be selected with great

⁷ On the jurisprudence of interests see Pound, *Jurisprudence*, (1959), and Schoch, ed., *The Jurisprudence of Interests* (1948).

⁸ On the jurisprudence of values, see generally McDougal and Feliciano, *Law and Minimum World Public Order* 302-309 (1961); Dewey and Tufts, *Ethics* (1936); James, *Essays in Pragmatism* (1951). On values in the age of science and technology, see Rev. Theodore M. Hesburgh, "Science and Technology in Modern Perspective," 28 *Vital Speeches* 631 (1962).

discernment. This problem is particularly critical when the subject is undergoing the critical developments perceptible in the one under consideration. Any choice of terms is not without attendant difficulties. For there is the need not only to signify precise concepts. There is also the need to avoid language which conveys unintended or undesirable connotations.

It is necessary to avoid the use of terms which might suggest or imply—either in themselves or in their probable antonyms—preordained or predetermined legal consequences. In particular it has been necessary to select language which seeks to avoid suggesting or implying closed categories of legal uses.

Involvement in an opposite approach might induce charges that the author was seeking to establish a law of space having all the hypothetical fixity of a sophisticated legal code. Nothing could be further from my intended purpose. It should be pointed out, perhaps, that one who embarks seriously upon an analysis of the developing law of outer space is in a particularly favored position to acknowledge the open-ended practical uses of outer space. If this be true, as it unquestionably is, there is an obvious need that legal terminology—at least at the most fundamental level of concepts and principles—should endeavor to be no more close-ended than the practical matters falling under its dominion. In short, there is the need to avoid language which might unconsciously close or predetermine the range of legal uses of outer space.

This law, while yet in its formative stages, should not be burdened with unsupportable assumptions flowing from unduly restrictive legal terminology. This conclusion must be balanced against the fact that acceptable legal concepts and terminology are moving forward, even now, through the well known processes of customary and conventional international law.

The law of outer space is developing by reason of man's thirst to use his new and far-reaching environment. The uses demonstrate the breadth of his vision, imagination, and courage.⁹ It is clear that the terminology selected will mold and shape law's concept of things permitted and things prohibited. For these reasons it has been my decision to employ the term "reasonable" to describe the range of legal uses of outer space.

The concept of reasonableness provides no final answers to legal problems confronting duly constituted decision makers. This permits the law of outer space to proceed upon both sound practical and normative considerations.

⁹ See pp. 88-123 dealing with the practical uses of outer space.

"Reasonableness" has a long and significant tradition in international law and in the municipal laws of nations. Its strong normative content takes into account the enumerated elements of the social complex. On practical, as well as theoretical grounds, it seems best equipped to deal with and even manage the direction which mankind expects the law of outer space to follow. Through reference to this concept the decision maker is accorded a scope of authority broad enough to secure fundamental needs and is not unduly inhibited by the demands of past logic and factual uncertainty as to the future. Since historically it has provided abundant guidance to law when conceived of as a growing institution in a living society, it may be predicted that for the law of outer space "reasonableness" will be an eminently suitable guide. All significant community needs can readily be subsumed under its broad umbrella. Thus, the theoretical and practical basis for the development of the law of outer space may be asserted to depend upon the reasonable uses of that dimension.

The doctrine of reasonable use of outer space not only takes into account the fact that law depends on both logic and experience, it also illustrates the fact that law is clear evidence of the ongoing concession by force to reason. Moreover, it takes into account the fact that law and policy are inextricably intertwined—and so far as outer space is concerned, the interrelationship is particularly profound. The concept avoids unpleasant antonyms. It supports the conviction that a sound approach to this subject must eliminate the appearance as well as the fact of seeking to preempt a closed-end area of law. It prevents the early development of conceptual brackets—between a fixed Scylla and Charybdis—by inhibiting any kind of a conceptual straitjacket for the dynamic qualities of a legal regime for outer space.

Through the concept of reasonableness the emerging law of outer space can obtain the benefits, so well known throughout the entire world, derived from common law processes and experience. It also permits ready access to the wisdom of the civil law system and to the common thread of reasonableness which permeates the world's other great legal systems. Thus, through the guidance of "reasonableness" one may take into account all of the forces of the social complex as they are brought to bear on the rapidly evolving and potentially significant law of outer space.

1. National and International Purposes to be Served

In a chronological sense the views expressed on the development of an international law of space during the past decade have demon-

strated a strong fixation on the concept of sovereignty.¹⁰ A second, and equally significant approach to the subject of outer space focuses on its being "devoted exclusively to peaceful and scientific purposes * * *" ¹¹ The foregoing language of Ambassador Henry Cabot Lodge to the Political Committee of the United Nations on January 14, 1957, was the forerunner to subsequent resolutions adopted by the General Assembly of the United Nations creating committees on the "Peaceful Uses of Outer Space." ¹²

While it has long appeared that the speculations and recommendations of lawyers concerning sovereign boundaries between airspace and outer space were premature, the discussions have served at least one constructive purpose. These discussions have called attention to the primary fact that nation-states have the same, if not greater, concern for safety and security in outer space as they have in air space and the surface and subsurface dimensions of the earth.

It probably does not miss the mark very far to assert that security in one form or another is an almost innate human need. States have as one of their most fundamental functions the providing of order, or security, to their peoples. In the international arena the nation-state has as one of its principal responsibilities the offering of protection against alien or foreign activities prejudicial to its members, as individuals, to the people as a body politic, and to the state as a legal abstraction.

These rights have long since been acknowledged by international law. They are based upon the inherent right of a state to exist. From this primary right flows the equally important inherent right of a state to engage in reasonable action to defend itself and to achieve

¹⁰ See the materials collected in *Space Law, A Symposium*, Special Committee on Space and Astronautics, United States Senate, 85th Cong., 2nd Sess., Washington (1959), hereafter cited: "Space Law, A Symposium;" *Legal Problems of Space Exploration, A Symposium*, Committee on Aeronautical and Space Sciences, United States Senate, Document No. 26, 87th Cong., 1st Sess., Washington (1961), hereafter cited: "Legal Problems of Space Exploration;" *Soviet Space Programs: Organization, Plans, Goals, and International Implications*, Committee on Aeronautical and Space Sciences, United States Senate, 87th Cong., 2nd Sess., Washington (1962), hereafter cited: "Soviet Space Programs;" *Survey of Space Law*, Select Committee on Astronautics and Space Exploration, United States House of Representatives, Document No. 89, 86th Cong., 1st Sess., Washington (1959), hereafter cited: "Survey of Space Law." See also the papers collected in the Proceedings of the First, Second, Third, and Fourth Colloquia on *The Law of Outer Space* (1959-1963).

¹¹ 36 *Department of State Bulletin* 227 (1957).

¹² See pp. 183-230 for the development of legal principles and rules on outer space in the United Nations.

the requisite security from legally nonpermissible acts of other states.¹³

From this it will be seen that there is a mutuality of interests between people per se and people organized in political institutions to conserve and maintain their ongoing independence and security. Where, in terms of space capabilities, there are nation-states of not too greatly disparate potentials, there is at least a realistic opportunity for accommodation based on mutuality of interests rather than on an expectation of unilateral destruction by one of the other. Based on mutuality of interests, the price to pay for such an effort is one which constantly requires appraisal and assessment by national leaders.

Barring an excessive imbalance—present or future—and the implementation of temptations facilitated thereby, today's precarious balance of terror emphasizes the necessity for a mutuality of interests in international peace and security. For, if there is to be a law of outer space it must be based upon the perception that mutuality of national interests will in fact be served. If there is no reasonable prospect for a mutuality of interests based on security needs, it is not likely that there could be much effective space law. Further, it is not likely that the mutuality of interests in peaceful uses—important though that may be—would overcome a void left by the nonexistence of mutuality in security.

If this be true it is clear, in the present world where nation-states not only make demands upon international law, but also participate in the resolving of such demands, that it behooves such states to put forward their demands from a suitable power base. That the entire power structure of the nation-state includes its recognition of and conformity to principles and rules of law is sometimes overlooked. It ill serves the authoritative decision maker in the age of space to overlook the role and function of law as an important part of the total decisional involvement. Further, since the age of space is essentially the politicized age of science and technology, it also is necessary for those engaged in the management of the decisional process to take full account of the comparative scientific and technological achievements and potential of the respective national groupings.

The importance of science and technology to the development of the law of outer space should be readily understood.¹⁴ Not only has the tempo of the social complex been vastly accelerated; science and

¹³ See pp. 116–118, 168–182, 218–250, 289–331 for an analysis of the legal rights of a state to maintain and enforce international peace and security and to engage in measures of self-defense.

¹⁴ See pp. 106–109, 319–328, 431–432 for a more detailed analysis of this point.

technology also have enormously extended man's control over his multidimensional environment. Man's new scientific and technological equipment have provided him with the occasion to extend his ego into space. His ego and his demand for international peace and security have not limited his outward ranging drives. As is well known, he now seeks more specific control over his total environment, and measured in directions, this now encompasses lateral movements into the high seas and downward into inner space, both water and land.

Specifically, in recent years, man acting through the political machinery of government has made ever increasing claims to extend his authority outward from his primary land base. This is true for the surface of the seas, superjacent airspace, for the subsurface seas, for management of the surface of the continental shelf, and for effective exploitation of areas lying below the continental shelf.

It is clear that man is reaching outward, downward, and upward. His capacity to exploit such areas raises substantial question as to inclusive or exclusive uses of such areas. National interest approaches the matter of use variously. Thus, the United States has opposed the existence of a larger "nuclear club" which presumably would enlarge national uses of outer space. At the same time it has supported demands at the United Nations and elsewhere for broad peaceful uses of outer space.

Two generalizations can be made. First, in the context of national security, the problem is principally twofold. What will be the substance of reasonable use? By what means will the law of reasonable use develop?

Second, in the context of the actual use of space as an environment for the wide-ranging development of man's inherent qualities, the problems appear to be very much the same. What will be the substance of reasonable use to achieve the blossoming of man's capabilities? By what practical means will the law of reasonable use develop?

The interaction of these two forces, namely, security and utility—one restrictive and from a political point of view largely cautionary in its orientation—and the other motivated by an awareness of affirmative opportunities, and hence designed to achieve the very broadest peaceful uses of outer space—provides the essential dilemma confronting the development of space law. This condition has contributed at present to the development of the law along extremely practical, if somewhat limited, lines.

Broad analogies to the international law of the sea and to the international law of airspace—each being quite opposite the other—have received some acceptance by those concerned with the formulation of the international law of outer space. This has resulted from

serious efforts to use certain insights and practices derived from these areas in formulating the principles and rules of outer space. This has been based on the fact that the current regimes of the sea and the airspace serve fairly well both national and international purposes. Thus, to the extent that comparable or approximately similar conditions seem to exist for outer space, it is but reasonable to expect that earlier practical experience—wherever it may be observed—will be incorporated to some extent into the practice and usage of outer space. This incorporation is preliminary to but directive of the path of space law.

Presently the international law of the sea and the international law of airspace contribute to common national interests in security. Thus, it is generally agreed that both customary and conventional international law accords to a subjacent state full sovereign rights in its superjacent airspace. This includes the right to exclude aircraft and other vehicles from such space. This is true even though there is no precise understanding as to the ultimate boundary of the airspace. The clear right to exclude, when coupled with adequate policy and power, conserves the security of the subjacent state.

On the other hand, the law of the sea contemplates two major zones, namely, territorial waters over which the state exercises full sovereign rights, and, the high seas. Sovereignty over territorial waters includes the right, subject to certain qualifications, to exclude ships and other vehicles from such space. The most notable qualification is the right of innocent maritime passage. The airspace over territorial waters is treated in the same way as airspace over national land areas. Such rules, just as those applicable to land areas and superjacent airspace, confirm the security interests of nation-states in these particular environments.

With the advent of modern science and technology and the minimization of ancient limits on time and space, states have for defensive purposes extended their historic controls—security-oriented and of a limited nature—into the high seas and to the airspace superjacent to such seas. Such zonal controls may not purport to subject the high seas to the sovereignty of any state, and pursuant to Article 2 of the now operative Geneva Convention on the High Seas, 1958, nation-states are assured freedom of navigation, freedom of fishing, freedom to lay submarine cables and pipelines, freedom to fly over the high seas, and other freedoms recognized by the general principles of international law.¹⁵

¹⁵ Franklin, *U.S. Naval War College International Law Studies, 1959–1960*, 203 (1961). Compare, Reiff, *The United States and the Treaty Law of the Sea* (1959).

This is true for the high seas, even though the extent of boundaries—just as in the case of the ultimate ranges of sovereign airspace—is not universally agreed to. The existence of precise physical limitations on boundaries is not the important consideration here. The important consideration is that certain boundary limitations admittedly do exist, that such limitations are very directly related to conceptions of security, that security is a conceptual seamless web of major political and legal concern to all states, and that international law purports to protect the rights of states to engage in appropriate security measures, and, in fact, international law does recognize inherent security rights of states. Just as in a military sense space has been linked to airspace as "a continuous and indivisible field of operations,"¹⁶ so also the concept of security knows no dimensional limitations. International law acknowledges the right of national security in all environments.¹⁷

Although modern space technology had its inception in the development of military rockets, it is common knowledge that a vast amount of space technology results in the manufacture of consumer goods beneficial to the general public. In fact one of the justifications for the expenditure of large public funds for space technology is that there is a spin-off of derivative consumer benefit from on-going, publicly supported, space research and development.

Space technology has provided a great variety of materiel and technique which have both military and nonmilitary applications. In so far as it is the firm national policy of the United States not to initiate offensive military activity, the military applications of existing equipment must be considered to be for defensive purposes, that is to say, for peaceful nonaggressive military and beneficial purposes.¹⁸ The fact remains that space technology has created equipment which lends itself to hybrid purposes.

Just as space vehicles can serve beneficial commercial and industrial purposes in such fields as meteorology and weather forecasting, communications, observation, and navigation, so it is equally clear that they have a vast military potential. One of the problems of the law of outer space is to catalogue the legal uses of such vehicles in order to provide the maximum range of benefit to mankind. In this

¹⁶ General Thomas D. White, USAF, "Air and Space Are Indivisible," 41 *Air Force* 40 (March 1958).

¹⁷ For a more detailed analysis of the international legal aspects of this observation, see pp. 102, 113-116, 168-182, 249-250.

¹⁸ The thesis that the dividing line between aggressive and defensive conduct is essentially a matter of intent and conduct has been accepted here. See pp. 34-44, 53, 118, 178-194, 320-337, *infra*, for a fuller discussion of this thesis.

connection it is clear that experience with ocean-going vessels is of value. Here the law has been able to distinguish on the basis of function and within this category on the basis of purpose between commercial passenger vessels and public military vessels. The mere fact that public military vessels may be used both for defensive, e.g., security purposes, as well as aggressive purposes, has not served to eliminate the use of such vessels or to lead to the assertion that their mere existence or their presence in some areas constitutes a violation of international law. One of the problems which is closely related to security in outer space deals with the ability to distinguish nonmilitary from military uses and to ascertain permitted physical locations.¹⁹

These basic facts were noted by President Eisenhower's Science Advisory Committee in 1958: "There is the defense objective for the development of space technology. We wish to be sure that space is not used to endanger our security. If space is to be used for [harmful] military purposes, we must be prepared to use space to defend ourselves."²⁰

In summary, the new dimension of outer space will be used for a number of purposes, including such reasonable uses as peaceful and scientific uses, advancement of security requirements, and for blurred, hybrid, or hyphenated peaceful-security purposes, as opposed to aggressive military objectives. There is the additional possibility that a state might unconscionably use space for unreasonable purposes, that is, aggressive military objectives. Any meaningful legal analysis of outer space must take these factors into consideration. Further, a balancing of these alternate uses must be resolved largely on the ground of reasonableness and subject to sanctions proportionate to practical needs.

These factors in turn must be weighed in the context of national goals and needs, community goals and needs, and legal concepts common to modern international law. Based on these considerations, and others, it will be possible to put forward certain governing principles and rules. Further, with these points in mind, it will be possible to suggest some tentative estimates as to the direction which the emerging law of outer space will most probably take.

¹⁹ See pp. 111-118, 178-181, 268-277, *infra*.

²⁰ *Introduction to Outer Space, An Explanatory Statement Prepared by the President's Science Advisory Committee 1* (1958). The Chairman of the Committee was Dr. James R. Killian. In prefatory remarks President Eisenhower made a policy statement calling for nations "to promote the peaceful use of space and to utilize the new knowledge obtainable from space science and technology for the benefit of mankind."

A part of the problem is to recognize that national and community interests may be quite relative to time and place and that frequently their goals are consistent and interrelated. Certain national interests may be stronger than other national interests. Thus, while security or self-defense is a primary national interest, there is still the question of whether it will be implemented by unilateral or collective means. And assuming that this question has been resolved, there is still the question of the degree of force which the defending entity will bring to bear on the offending entity. Usually it will be found that the degree of interest in self-defense manifested by the threatened nation will be related directly to the proximity of the danger to the threatened nation. That is, an attack upon the homeland may be regarded as more serious than an attack upon a distant possession. Or, an attack upon a distant possession might be regarded as more grievous than an attack upon an unreliable ally. In a practical sense, prior to the age of outer space and the atom, the notion of self-defense has always been strongest respecting contiguous areas, which also were easier to defend.

In view of the contraction of time and space the concept of self-defense is now a feasible nondimensional concept. National strategy has thus been much influenced by military capabilities in space. As a result, mutual international interests demand that the concepts of space security and self-defense be equipped with meaningful substance, including adequate safeguards against improper use.

Despite the doctrine of proportionality²¹ which has received recently increasing attention in the Free World, there are at the moment no clear assurances that it has been accepted by Communist states. This fact highlights the need for alternatives to power politics approaches to international problems. Alternatives exist in processes designed to mitigate by pacific means "acts of aggression or other breaches of the peace."²² However, until the entire world has dem-

²¹ Secretary of State Webster wrote to Mr. Fox on April 24, 1841, that "nothing unreasonable or excessive [must be done], since the act, justified by the necessity of self-defense must be limited and kept clearly within it." II Moore, *Digest of International Law*, Sec. 217, at p. 412 (1909); compare Secretary of Defense Robert S. McNamara, "The United States and Western Europe," 28 *Vital Speeches* 626-629 (1962), Deputy Assistant Secretary of Defense Alain C. Enthoven, *Department of Defense Press Release* 2-12, Feb. 11, 1963. Jessup, *A Modern Law of Nations* 158 (1952) says: "National justifications for the lesser uses of force have been generally couched in legal terms—self-defense, defense of national lives and property, reprisals, retaliation—and the customary law developed tests of the propriety of such conduct." Compare, Hindmarsh, *Force in Peace* (1933).

²² U.N. Charter, Arts. 1(1), 2(3), 33.

onstrated with credible evidence a willingness to make use of pacific third-party judgments in international disputes, it is clear that the legal doctrines of security and self-defense as presently constituted, will have significant applicability to the law of outer space. The concepts of self-defense and security will be strong because of the importance of the interests being protected.

While present emphasis no longer considers the subject of sovereignty in outer space to be of first importance, yet the fact that this subject received almost exclusive attention on the part of students of the law several years ago is instructive.²³ Such discussions illustrated an initial and important concern for national control over outer space. Such thinking undoubtedly was based on the view that such control would or might further national security in man's whole environment. Yet, while current discussions have turned from this fixation on "sovereignty," there is still a fundamental interest in protecting man against imroads upon his security from outer space. Man's earth-bound orientation will influence and control the substance of the law of outer space. This is true not only because of his interest in security but it also reflects his growing belief that outer space, through its reasonable and peaceful uses, can serve many of his fundamental needs.

Thus, outer space provides a remarkable challenge to man as man. It challenges man as scientist. It also provides an intense and satisfying challenge to the lawyer, for it is his special task to extend concepts of justice and order throughout the totality of man's environment. Under these circumstances it does not seem fitting that lawyers—more by default than by overt conduct—should permit the management of these worthy goals to be delegated to others.

a. National and International Capabilities in Outer Space

International law as the product of man's intellect is influenced by the forces of the social complex, including man's appraisal of power. With the advent of the atom, if not before, and in any event prior to the space age, it was becoming clear that intellectual pre-eminence—particularly as measured by scientific and technological achievement—was a very substantial factor in overall national strength.

²³ Compare, for example, Welf Heinrich, Prince of Hanover, "Air Law and Space," 5 *St. Louis University Law Journal*, 11-69 (1958) which first appeared in Germany in 1953; John C. Cooper, "Legal Problems of Upper Space," 1956 *Proceedings of the American Society of International Law*, 85-94; Lipson, *Outer Space and International Law*, 1-10 (1958); Goedhuis, "Sovereignty and Freedom in the Air Space," 41 *Transactions of The Grotius Society*, 137-152 (1956).

Leadership in science and technology has become a primary consideration in ascertaining the total power picture of national states. In the world's present context of unstable equilibrium or balance of terror, it is clear that "Science and technology enter into almost every policy judgment that must be made in the day-to-day conduct of foreign affairs."²⁴

An understanding of the outer space capabilities of nations and groups of nations is fundamental to an understanding of the policy considerations affecting the substance and direction of the emerging law of outer space. The influence of nations is disproportionate. Therefore, their contributions are bound to be somewhat unequal in the direction given to this new area of law.²⁵

By reason of the great costs and stresses involved in advanced space research projects, only a nation rich in creative individuals, human energy, and raw materials can qualify as a leader in the race to exploit outer space. Nonetheless, the current attitude of mankind is reflected in claims for the broadest possible distribution of the benefits deriving from the peaceful and scientific uses of outer space—claims which have been asserted by nations without respect to their potential in space science and technology.

As a result of these demands, the more favorably situated states, both on their own initiative and as a result of international opinion, have encouraged cooperative participation by all states in an effective exploitation of man's newest dimension of his universe. The cooperation has taken the form of joint national projects covering many subjects and with benefits widely distributed across the globe. This has led to wide ranging private efforts, such as the International Geophysical Year, 1957-1958, and well-known private commercial developments. The cooperation has also taken the form of sharing of information and materials with individuals and national governments where limited space science and technological capability has resulted in slow progress.

Men of science and technology continually point to the fact that their subject matter is universal, knows no boundaries, and can be dangerously repressed by efforts at artificial control. They seek a very high degree of communication in the hope that the reciprocal sharing of information will permit man to more fully master the unknowns of his universe. Their purpose—one which stands very

²⁴ Berkner, "Earth Satellites and Foreign Policy," 36 *Foreign Affairs* 230 (1958).

²⁵ For a description of national space interests see Odishaw, ed., *The Challenges of Space* 155-232 (1962), and December 1962 U.N. Docs. A/C.1/PV.1289 through A/C.1/PV.1298.

high on man's scale of values—is to permit him to master his environment. Lord Hailsham, British Minister of Science, has put it this way: "Perhaps our most essential human characteristic is the desire to conquer our environment by conscious and cooperative effort. In one sense this is what science—and in another sense this is what politics—is about."²⁶

Illustrative of the need for a wide cooperation, if there is to be an effective exploitation of scientific data, is the example of weather forecasting. Here the entire success of a cooperative program and the utilization of accumulated evidence depends upon the obtaining of data from the far-flung corners of the world, the rapid communication of gathered information to a few centrally situated data centers, fast analysis, and immediate dissemination to the ultimate consumer—whether he be conversationalist, farmer, sailor, fisherman, businessman, strategist, tourist, or another.

At the present time leadership in space science and technology appears to be reserved to two states—the United States of America and the Soviet Union. This leadership is based essentially on their economic wealth, since many other countries, notably in Western Europe, possess other characteristics which enable them to aspire to the rank of leadership in outer space. It is highly significant that in June of 1962, a European Space Research Organization (E.S.R.O.) was created by eleven states, and that in the preceding April, a Convention establishing a European Organization for the Development and Construction of Space Vehicle Launchers (E.L.D.O.) had been entered into by seven states.²⁷

²⁶ "The Imperatives of International Cooperation," 18 *Bulletin of the Atomic Scientists* 9 (Dec. 1962). According to the American scientist, William H. Forbes, "Scientists are already considerably more internationally minded than most other groups and are therefore easier to make contact with, especially if the contact is made by scientists." "The Role of Science Attachés," 13 *Bulletin of the Atomic Scientists* 275 (Oct. 1957). "Science is the one common language understood the world over. By exchanging scientific viewpoints and working on common scientific problems . . . men of all nations may be drawn closer together. The endless frontiers of science, now stretching to the stars, can provide rich opportunities for men to seek a common understanding of the natural forces which all men must obey and which govern the world in which all men must live together." Killian, *Strengthening American Science, A Report of the President's Science Advisory Committee* 27-28 (1958); compare, George B. Kistiakowsky, "Science and Foreign Affairs," 42 *Department of State Bulletin* 278 (1960), who asserted "[S]cience is today one of the few common languages of mankind; it can provide a basis for understanding and communication of ideas between people that is independent of political boundaries and ideas."

²⁷ Odishaw, *supra* note 25, at 155. See pp. 81-84 following for detail. It was anticipated that thirteen states would participate in this program. For a com-

Additionally, as is well known, at least France, which participates in the two foregoing programs, has sought an independent nuclear capability in outer space. There can also be no doubt that the Chinese People's Republic (Red China) will one day make claims to an improved status in the area of space science and technology.

It must be recognized that present and future scientific and technological competence will affect very materially the political and military postures of nations. This in turn will have the most fundamental impact upon the substance of the law of outer space.

Because of the extreme importance of this consideration—which is central to an analysis of this subject—it will be necessary to explore the present and probable future comparative scientific and technological condition of the Free World with that of the Soviet Union.

The scientific and technological capabilities of a nation-state or group of allies will have a direct bearing on the substance of space law acceptable to them. Thus, a state standing high in scientific and technological capabilities would presumably benefit materially from an opportunity to exploit its capabilities. A state might accomplish this by maintaining a policy of the largest and freest use of outer space. In a legal context this would then argue for emphasis upon freedom of use and would oppose limited or restricted uses. In short, why should a state possessing scientific and technological proficiency in space support a legal theory respecting the use of outer space which would deny or restrict its right to exploit its scientific and technological capabilities? On the other hand, a state which does not possess large space technology assets might argue for a more limited use of outer space, thus seeking by legal and political devices to achieve a certain negative equality. In this fashion such a state might seek to avoid its practical shortcomings. The latter state might, because of its practical limitations, feel that it was to its interest to make political-legal claims whereby legal limitations would be impressed upon scientifically and technologically more advanced nations.

ment on an American program in 1960 to cooperate on space activities with Japan, the United Kingdom, and NATO countries, see Merchant, "Importance of the Space Program in International Relations," 42 *Department of State Bulletin* 215-216 (1960). For a report setting forth national space activities and cooperative efforts by thirty-five countries, see U.N. Doc. A/AC.105/7 4-76 (1962). See also nineteen "National Reports on Space Research Activities," 11 *COSPAR Information Bulletin* 3-106 (1962). Many cooperative programs between the United States and other countries have been initiated by the National Aeronautics and Space Administration (NASA).

(1) *Free World Science and Technology; An Appraisal*

If leadership in practical space science and technology is so important to such national interests as security and the widest possible peaceful and beneficial use of outer space, what then is the present and expected future position of the United States and the Free World in the space contest? It is the judgment of experts that the Free World is in the vanguard in the space contest, and, moreover, that the United States is in a pre-eminent position, despite some unevenness of past performance.

The most sober judgment that can be made at this time as to the range of space capabilities of the Free World and its adversaries is that neither side possesses a lead so commanding as to cause one side or the other to embark upon reckless space policies. Their respective capabilities at the present are not so disparate as to negate or destroy the existing mutuality of interest in the employment of space vehicles for nonaggressive, i.e., peaceful and beneficial purposes.²⁸ Further, it now appears that no space contestant presently has, nor can it reasonably anticipate, an absolutely preponderate lead in the space race and that neither adversary expects an exclusive and significant breakthrough on the scientific and technological front. In view of these conclusions it would appear that no country at the present time—and probably in the future—could base a policy upon a claim for a monopoly of the use of space or for unrestricted aggressive uses of space.

The evidence in support of this view must be subjected to the most careful analysis. The United States historically has demonstrated a keen interest in scientific and technological innovation. And it has sought to maximize the use of its ideas and products. Thus, the pre-revolutionary experiments of Benjamin Franklin and his interest in research have left a strong imprint upon our national image. The coming of the industrial revolution to the United States and the pioneering efforts required to convert raw resources into consumer goods stressed the role of the practical man. The establishment of

²⁸ Dr. Hugh L. Dryden, Deputy Director of the National Aeronautics and Space Administration, has outlined the general objectives of the U.S. space program as follows: "(1) to study the space environment by scientific instruments of many types launched into space by sounding rockets, space probes, earth satellites and artificial planets; (2) to begin the exploration of space and the solar system by man himself; (3) to apply space science and technology to the development of earth satellites for peaceful purposes to promote human welfare; and (4) to apply space science and technology to military purposes for national defense and security." *The National Significance of the Augmented Program of Space Exploration* 2 (1961).

universities and scientific and technological institutes was uniformly greeted with vast pride and approval. Their graduates were regarded as a valuable resource in the expansion and exploitation of the national potential. As individuals they contributed largely to the augmentation of national prestige and power. Although at first, as practical people in a new land, they were frequently more interested in technological applications than in pure research, yet in later years they became thoroughly aware of the importance of pure science for its own purposes.

With the coming of the Second World War, science and technology were diverted from their usual concern with peaceful goods and services and were enlisted in the military cause of winning a just peace.²⁹ The many abstract scientific problems, including those attendant to the splitting of the atom, and the remarkably successful answers which were forthcoming, provided sound support for the view that America and Americans possessed a superior competence in scientific and technological matters.

This conviction, which had engendered some post-war complacency, suffered a severe shock with the launching of Sputnik I. This achievement, according to Berkner, "demonstrated to Americans what they refused to believe before, that they are in a race for intellectual leadership when they hadn't realized that there was a race, or even that another nation had the capability to challenge their technology. In the complacency of our assumed technological lead, we have confused our high standards of living and material prosperity with intellectual stature. It is an extravagant and dangerous mistake."³⁰

A balanced view of the present American position in the space race must take into account many considerations. The science and technology of the Soviet Union historically has not been so advanced as that of the United States, but in recent years much progress has been made. Whereas American concentration during the period following World War II down to Sputnik I was essentially consumer oriented, the Soviet concentration following that war was more proximately devoted to military and heavy industrial needs. During the period since 1947, Soviet advances in certain areas, including military and space technology, have been very rapid. The Soviet capability in the area of large rockets and heavy boosters for space vehicles has exceeded that of the United States, but the latter is now concentrating vast resources in this area and good progress is being

²⁹ Bush, *Modern Arms and Free Men*, 27-71 (1958).

³⁰ Berkner, *supra* note 24, at 223.

made. Overall advancement in both nations is to a large extent a matter of policy and intent, and while the Soviets have been willing to devote almost exclusive attention to military technology, the United States is seeking to allocate its resources between nonmilitary and military needs. At the present the competition for excellence in space is announced policy on the part of both nations, and intellectual attainment in science and technology is recognized as a primary national objective.³¹ The space race has, in fact, produced a myriad of wonders never before enjoyed in man's long and turbulent history.

An appraisal of national scientific and technological capabilities is not an easy task, if for no other reason than the vastness of the subject. The difficulty is enlarged by reason of the fact that national prestige and power are so intimately related to such capabilities. Unique leads in specialized fields may contribute disproportionately to notions of prestige and power, whereas a more balanced appraisal would suggest other perspectives.

Thus, in the United States it has long been recognized that "the strongest scientific program is the program with the greatest breadth and scope. It is impossible to predict from which quarter the next scientific advance will come; but we can try to make sure that the Nation has able people at work across the whole scientific frontier."³² This conclusion is based largely on the conviction, broadly held among scientists, that science is "so completely, and so unpredictably, interconnected that it is necessary that the entire front advance as a whole; and that it is both silly and self-defeating to attempt to force too deep advances on narrow segments."³³

At the outset it is to be acknowledged that the launching of a man-made object into outer space, and particularly orbiting such a vehicle beyond the gravitational attraction of the earth, is a major achievement. Only nations possessing high scientific, technological, and material resources are able to claim such accomplishments. That both the United States and the Soviet Union possess the mini-

³¹ President Kennedy in his September 13, 1962 speech said that "no nation which expects to be the leader of other nations can expect to stay behind in this race for space." And, "I regard the decision last year to shift our efforts in space from low to high gear as among the most important decisions that will be made during my incumbency in the office of the Presidency." On May 25, 1961, President Kennedy had announced an accelerated U.S. space program.

³² *Strengthening American Science*, *supra* note 26, at 2.

³³ Warren Weaver, "A Great Age for Science," in *Goals for Americans, The Report of the President's Commission on National Goals*, 111 (1960). Compare, Thomas J. Watson, Jr., "Technological Change," *Ibid.*, 193-204.

mum capabilities to achieve such successes is a well known fact.³⁴ Some doubt has been expressed, however, whether a single nation may be able to muster sufficient resources for extended manned flight, or at least, without prejudicing other legitimate national goals.

Thus, an appraisal of their respective capabilities in science and technology must be directed not only to gross competences but also to specialized capabilities. For purposes of analysis, American scientific and technological strengths will be discussed first.

On October 9, 1957, President Eisenhower, after offering his congratulations to Soviet scientists for their successful orbiting of a man-made satellite, stated "I consider our country's satellite program well designed and properly scheduled to achieve the scientific purposes for which it was initiated."³⁵ In the intervening years there have been many public and private appraisals of relative specific achievements of U.S. and Soviet space programs.

James R. Killian, Special Assistant to President Eisenhower for Science and Technology, made the following appraisal of U.S. technology on January 7, 1958: "The United States today is technologically strong and growing stronger. I do not believe that we have lost out technological leadership nor that we are predestined to lose it in the future—provided we increase our technological zest and audacity and we do not fail to remedy our weaknesses. The launching of Sputnik has given many people the idea that the Russians suddenly have complete technological superiority over us. This impression is wrong."³⁶

He made the following comparison with Soviet accomplishments: "What Sputnik has shown is not that leadership has passed from the U.S. to the U.S.S.R. but that we must expect in the future more instances of Russian challenge to our scientific leadership. Sputnik has shown that the U.S.S.R. is a very serious competitor in the technological field. She has not passed us yet, but she has a strong will to do so."³⁷ He summarized his views as follows: "If we fulfill our

³⁴ President Eisenhower in referring to the Soviet's successful launching of Sputnik I said "The Soviet launching of earth satellites is an achievement of the first importance, and the scientists who brought it about deserve full credit and recognition." "Science in National Security," 37 *Department of State Bulletin* 820 (1957).

³⁵ "Summary of Important Facts in Earth Satellite Program," 37 *Department of State Bulletin* 674 (1957).

³⁶ Killian, "Maintaining the Technological Strength of the United States," 38 *Department of State Bulletin* 187 (1958).

³⁷ *Ibid.*

potential for skill, talent, education, and quality, if we can give full recognition in our national life to the importance of emphasizing quality and of achieving intellectual preeminence, both for our internal benefit and our external position, there would appear to be no real impediment to our steady technological advance.”³⁸ His judgment was based on the American pattern of education, her technological facilities, and the maturing skills and freedoms of American industry. Explicit was his faith in the productive capabilities of free and dignified individuals.

Dr. Killian singled out for particular praise American leadership in the fields of pure nuclear physics including its military and general industrial implications. In his view American capability in low-energy nuclear physics was undisputed. He also credited the United States with leadership in “high-speed calculating machines, polymer chemistry and its applications to plastics and synthetic fibers, solid-state physics and its applications to transistors, and many other fields.”³⁹

His appraisal of Soviet accomplishments rated them high in high-energy nuclear physics, including the possibility of their achieving excellence in that field, and credited them with good competence in oceanography, rocket propulsion, theoretical mathematics, space medicine, and some fields of electronics.⁴⁰

In December of 1958, Dr. Killian, as chairman of the President’s Science Advisory Committee, appraised American scientific leadership in these words: “No one should infer from this report that U.S. science is beset with fatal flaws or deficiencies. Actually, *it has a scope and depth unequaled anywhere in the world*. In less than a generation, the U.S. has wrested scientific leadership from its birthplace, Europe, and since 1945 over half of all Nobel prizes in the sciences have been awarded to Americans. The Federal Government has played an important role in this achievement. But continued leadership in science will require a more diligent and farsighted effort on the part of Government—as the largest supporter of research—to see that its influence on U.S. science is informed and guided by wise and coherent policies.”⁴¹

In January, 1960, Under Secretary of State Livingston Merchant appeared before the House Committee on Science and Astronautics

³⁸ *Ibid.*, at 190.

³⁹ *Ibid.*, at 187.

⁴⁰ *Ibid.*

⁴¹ *Strengthening American Science*, *supra* note 26, at 3. (Italics added.)

and appraised the United States space program. It was his view that while the United States was "behind the Soviet Union in total outer-space achievements, a balanced appraisal indicates substantial and significant achievements on our own part * * * [O]ur program of space science and its practical applications appears to be sounder and broader than that of the Soviet Union. What we have done and are continually doing in the many fields of modern science and technology, in addition to outer space, makes absurd any contention that scientific and technological leadership on any broad front has passed to the Soviet Union."⁴² Further, "Our own achievements negate any contention that scientific and technical leadership on any broad front has passed to the Soviet Union."⁴³

To all this he added the following caution: "It has become apparent to all that the Soviet Union is capable, where it chooses to concentrate its efforts, of pioneering work in advanced and difficult fields of science and technology. It has been demonstrated that the Soviet Union is not limited to following and imitating the achievements of Western science and technology."⁴⁴

In January, 1960, Professor George B. Kistiakowsky, Special Assistant to President Eisenhower for Science and Technology, in commenting on the political impact of scientific leadership, referred to the intermingled problems of prestige and scientific capabilities. He accepted the fact of special Soviet capabilities in the field of large rockets. He pointed out that the United States, having first achieved nuclear weapons capabilities, had thereupon designed and perfected rocket-booster vehicles only large enough to launch the smaller and more sophisticated pay-loads. Thus, the United States elected to move ahead as rapidly as possible in ballistic missiles and made its "missiles as compact as possible to deliver warheads of adequate yield."⁴⁵ He also pointed out that "extra-large rockets are not required for our long-range missiles; hence our deficiency in outer-space payload capability does not indicate an inferior military capability."⁴⁶

In making a general appraisal of U.S. and Soviet space technology, Professor Kistiakowsky observed "Our scientific studies of outer space, accomplished with smaller rocket boosters, have enjoyed

⁴² *Department of State Bulletin* 214 (1960).

⁴³ *Ibid.*, at 217.

⁴⁴ *Ibid.*, at 213.

⁴⁵ George B. Kistiakowsky, "Science and Foreign Affairs," 42 *Department of State Bulletin* 277 (1960).

⁴⁶ *Ibid.*

unprecedented successes. Our scientific achievements in space have easily matched those of the Soviet Union, notwithstanding the greater publicity given to the Soviet technological spectaculars."⁴⁷ He concluded with the important view that "The striving to emulate American scientific and technological progress has become an ambitious and urgent goal for countless millions of people, including, I might note, the Soviet Union."⁴⁸

The close interrelationship between prestige and scientific capabilities was also reported by President Eisenhower's Committee on Information Activities Abroad. In 1961 Mr. Mansfield D. Sprague, Chairman of the Committee, stated "The United States has had, and continues to have, over-all superiority in science and technology. Nevertheless, since the launching of Sputnik I there has been considerable evidence of a widespread belief that Soviet capability continues to grow relative to that of the United States and that the Soviet Union leads in certain important aspects of space technology."⁴⁹ The large-booster capabilities of the Soviets had provided so large a prestige lead for them that the committee thought that it would be hard for American prestige in the space area to be easily reestablished short of a revolutionary scientific breakthrough. It probably would be more factual to say that American prestige would be improved through successes as spectacular as those enjoyed by reason of the large-booster capabilities of the Soviets. It is the view of scientists and technologists that revolutionary scientific breakthroughs are very rare, and when they do occur they seem to spring up almost simultaneously in many parts of the world.

More recent observers have also given the United States a position of leadership in science and technology. Our science has been described as being in a "flourishing state," as a "well-rounded establishment," and as of 1961 as "pre-eminent in every field."⁵⁰ As to Ameri-

⁴⁷ *Ibid.*

⁴⁸ *Ibid.*

⁴⁹ Sprague, "Extracts from the Conclusions and Recommendations of the President's Committee on Information Activities Abroad," 44 *Department of State Bulletin* 191 (1961). See generally, "The Next Ten Years in Space, 1959-1969," *House Select Committee on Astronautics and Space Exploration*, 86th Cong., 1st Sess., Washington (1959).

⁵⁰ Piel, *supra* note 6, at 187-188. Early in 1963 Deputy Assistant Secretary of Defense Alain C. Enthoven pointed to the fact that "the gross national products of the United States and our allies are more than twice the same total for the Soviet Union and its allies; in terms of industrial production, the ratio is more than two and one half to one." He added "our wealth and technology confer on us some important advantages in non-nuclear combat." *Supra* note 21, at 11-12.

can technology, Piel also commented "Technology is what we are supposed to be good at. After all, our country is the most powerful industrial nation in the world."⁵¹

Much credit for continuing American leadership is given to efforts to cross-fertilize the different scientific disciplines. This has produced a synthesis, and has thereby enriched the entire range of science and technology. However, where there has been a highly segmented approach weaknesses have been observed. There has not been, for example, a close relationship betwn biology and physics in the United States with the result that biophysics has not kept pace with other fields.

Writing in the latter part of 1962, Robert A. Kilmarx has endeavored to compare American and Soviet scientific and technological strengths and weaknesses. He has held that "At the present moment, the United States is still generally ahead of the Soviet Union in both science and technology, but not in a number of important areas. The realities of increasing Soviet scientific and technological strength cannot be gainsaid."⁵²

There can, of course, be no absolute appraisal of ultimate strengths in an area as broad and dynamic as this. American sources generally assert that the United States is strong and preeminent in such basic sciences as agriculture, biology, chemistry, physics, and medicine. The situation for the United States is, perhaps, not so favorable in the derived or environmental sciences, including hydrology, meteorology, seismology, and water resources. But, neither are the Soviets particularly strong here, since excellence in these fields depends on special facilities resulting from the use of the entire world as a laboratory.

Kilmarx reports that the Soviets are behind the United States in optics, photography, metallurgy, electronics, biological sciences, and probably other areas.⁵³ It is clear that the contest has been joined. In the words of Dr. Berkner "A race for intellectual preeminence is not in itself undesirable, for it is regenerative in character; like the intellectual challenges faced in the past it can, in the long pull, bring only benefit to man."⁵⁴

It is clear that the Soviets, after a slow start in the fields of science and technology, have been coming along rapidly during the post-

⁵¹ *Ibid.*, at 196.

⁵² Robert A. Kilmarx, "Soviet Competition in Science and Technology," 43 *Current History* 201, 205 (1962).

⁵³ *Ibid.*, at 203-204.

⁵⁴ Berkner, *supra* note 24, at 231.

World War II period. The large interest in these fields and the tempo of their progress has reached the point where in some areas they are competitive with the United States.⁵⁵

A realistic appraisal of Soviet scientific and technological achievements as related to the problems of outer space was made by Under Secretary of State Merchant in January of 1960, when he reported "By being first to achieve success in space flight, the Soviet Union has reaped great prestige. Continuing achievements have made this gain an enduring one. It has become apparent to all that the Soviet Union is capable, where it chooses to concentrate its efforts, of pioneering work in advanced and difficult fields of science and technology. It has been demonstrated that the Soviet Union is not limited to following and imitating the achievements of Western science and technology. Although this new and justified view of Soviet capabilities is greatly to the credit of the Soviet Union, Soviet spokesmen would like the world to draw even more far-reaching conclusions. The Soviet Union would clearly like the world to conclude from its successful satellites and lunar probes that the Soviet Union has drawn abreast and even ahead of the United States in all of the broadly related fields which contribute to or derive advantage from such accomplishments. Further, the Soviet argument runs that these successes portray over-all capabilities, including military strength, and therefore that the Soviets ride the wave of the future. The spectacular character of Soviet achievements has undeniably overshadowed the accomplishments of the United States, and it would be dangerous to regard as insignificant the effects of Soviet claims based on its achievements."⁵⁶ It was his conclusion that Soviet scientific and technological accomplishments pose a "threat" which "is neither purely political nor short-term." Their achievements were evidence of "strong scientific, technical, and industrial capabilities, organizational effectiveness in concentrated effort, and they reflect growing military strength."⁵⁷

The interrelatedness of science, technology, military capabilities, and outer space was acknowledged by Allen W. Dulles, as Director of Central Intelligence, in a 1960 speech. He pointed out that "There is no tendency in the intelligence community to underestimate Soviet sophistication in any phase of the missile field or the progress they have been making in developing their long-range missile system. I believe that the Soviets are trying to take advantage of the publicity

⁵⁵ Soviet Space Programs, *supra* note 10, at 3-34.

⁵⁶ Merchant, *supra* note 42, at 213-214.

⁵⁷ *Ibid.*, at 216.

they have achieved with respect to both missile and space programs in order to make the unsophisticated believe that these achievements mean overall superiority in the military field. Such superiority, in the opinion of more qualified experts than I, does not exist." ⁵⁸ In view of the stern and relentless competition of the Soviets, he counseled against American complacency.

The form of Soviet competition with American scientific and technological methodology has been analyzed by Professor Kistiakowsky. He has contended that American strength lies in "excellence spread over a wide scientific and technological base. It is a feature of an authoritarian form of society that its government can concentrate efforts in narrow fields. If the total strength of such a society is substantial, as is that of the Soviet Union, then what one might term temporary technological superiority can be achieved by it in selected sections. So long as this superiority is temporary, so long as it does not permit a vital military advantage, and so long as it is not across a broad front, there is no need for alarm * * *. We must constantly bear in mind the sound military doctrine not to accept battle on the field of the enemy's choosing. Rather, we must continue to move across the entire broad front of scientific and technological advance. Thus, as a nation, we will remain a world leader." ⁵⁹

Thus, it will be seen that Soviet scientific and technological achievements are based essentially on three factors. There is the improved status of the Soviet intellectual community. There is close coordination between Soviet policy and scientific objectives. There is also good motivation and dedication on the part of the intellectual community to achieve excellence. It is interesting to note that the great value of scientific and technological product to the Communists has resulted in a high degree of independence on the part of the intellectual community from usual political controls.⁶⁰

The close relationship between Soviet science and national policy was recounted in 1960 by the Science Adviser to the American Secretary of State. Dr. Wallace R. Brode pointed out that only such science programs as furthered the aim of the Communist Party were promoted in the Soviet Union. In support of his position he cited the

⁵⁸ "Intelligence Estimating and National Security," 42 *Department of State Bulletin* 415 (1960).

⁵⁹ Kistiakowsky, *supra* note 26, at 278.

⁶⁰ Berkner, *supra* note 24, at 227. He describes this as an "extraordinary spectacle in a totalitarian state." Equally impressive are Soviet statistics for 1963: "Fifteen academies of sciences, 4,172 Research Institutions and 524,000 Scientists—this is the physical structure of Soviet science today." "Our Trends," 7 *USSR, Illustrated Monthly* 3 (July, 1963).

report of the Vice-President of the Soviet Academy of Science in 1959, Dr. Aleksandr V. Topchiyev, as follows:

The party teaches us that when tasks have been determined, it is necessary first of all to organize our forces in such a way as to solve the tasks placed before us with a minimum expenditure of resources and with maximum effectiveness. The new increase of research works in decisive sectors of science will require a fundamental reorganization of the Academy of Sciences, U.S.S.R., and its institutions. The reorganization of the Academy must guarantee that scientific work is brought closer to the demands of life * * *⁶¹

In 1960 a survey was conducted by Professor Warren B. Walsh of Syracuse University in which he consulted more than fifty American scientists respecting the condition of Soviet science and technology. It was his conclusion, which conforms to the pattern already apparent, that the Soviets have the "ability and the capability to accomplish any humanly possible scientific mission to which the Soviet rulers assign high priority."⁶²

Specific findings reported by Dr. Walsh include the fact that the Soviets have had a long interest in astronomical research and have a quantitative superiority in satellite orbit analysis, but that this commitment has not existed in cosmology and theoretical seismology. Lacking a large number of advanced computers the Soviets have not engaged in detailed research in general astronomy and in statistical physics. Although they are second in the field of mathematics, they were in 1960, "the world leaders in the mathematical subfields of analysis, nonlinear differential equations ('the sub-field closest to applications'), the theory of control circuits, that branch of geometry which deals with complex figures, and, perhaps also in topology."⁶³

American leadership was observable in other fields. Thus, the Soviets "lag somewhat behind the United States in mathematical logic, modern algebra, algebraic geometry, and geometry as a whole. The Soviets excel in analytical number theory, but the United States leads in other aspects of number theory."⁶⁴

⁶¹ Quoted by Wallace R. Brode, "National and International Science," 42 *Department of State Bulletin* 738 (1960).

⁶² Warren B. Walsh, "Some Judgments on Soviet Science," 19 *The Russian Review* 285 (1960). Compare, Marshak, "Reexamining the Soviet Scientific Challenge," 19 *Bulletin of the Atomic Scientists* 12-17 (April 1963); P.H.A. "International Competition in Science," 140 *Science* 773 (May 17, 1963).

⁶³ Walsh, *ibid.* at 281, 279-280.

⁶⁴ *Ibid.*, at 281.

According to Walsh, the Soviets possess an excellent precision instrument industry and are able to produce high quality chemical apparatus. They have been able to engage in quality research in the field of physical chemistry, and particularly polymerization, kinetics, combustion, and plastics. All have applications in the production of missiles and rockets. Other areas in which the Soviets rate well include nuclear chemistry, including applications in the area of ultra-sensitive photographic emulsions; organic chemistry, including research on organo-metallic and organo-lithium compounds; physics, including the quantum field theory, quantum electrodynamics, and the theories of strange particles; solid-state physics, including applications in microwave spectroscopy and other microwave techniques; and seismology, among others.⁶⁵

In certain areas there seems to be an unevenness in quality. Thus, again, according to Walsh, in statistical physics only a limited amount of research is of a very high quality, as is substantially true in acoustics and plasma physics. In high energy nuclear physics the "range of results has run all the way from brilliant to poor * * *"⁶⁶ and in low energy nuclear physics "there have been no significant Soviet contributions * * *"⁶⁷ The Soviet interest in satellites and other space vehicles has resulted in excellent work in hydrodynamics and astrophysics. Thus, while there has not been much interest in general astronomy, there has been excellent work done in those aspects of the subject which "are of great importance to the space age—radioastronomy, astronomical geodesy, and astronomical theory."⁶⁸ Medical science has not achieved the same standing as in the United States.

The more recent analysis of Kilmarx bears out the same general conclusions. He has described Soviet physics and mathematics as being "high level," and their theoretical physics, high energy nuclear physics, low temperature physics, and theoretical aspects of solid-state physics as demonstrating "particularly outstanding competence."⁶⁹ He has rated their astronomy and geophysics as having achieved remarkable successes during the past decade. Their geophysical sciences lead "the world in quantity of work done," and their physical chemistry is "outstanding" and comparable with that of the West."⁷⁰ As to their biological sciences, it is apparent that this

⁶⁵ *Ibid.*, at 282-283.

⁶⁶ *Ibid.*, at 283.

⁶⁷ *Ibid.*, at 284.

⁶⁸ *Ibid.*

⁶⁹ Kilmarx, *supra* note 52, at 203.

⁷⁰ *Ibid.*

has been of inferior quality until recently, but that "real progress now is being made."⁷¹ Their on-going research on life in a sustained space environment may have put them ahead of the United States in this field. This again demonstrates the uneven quality of Soviet research, since their prior record in medical and biological research has not been of the highest order.

On the basis of facts of the kind just presented, it is clear that a sweeping judgment as to comparative excellence is not easy to make. There seems to be a consensus of opinion that Soviet science is very good in the higher energy realms. It is also clear that whenever concentrated efforts have been made in particular areas the product has generally been of a very high order. It is also equally clear that both the United States and the Soviet Union, in contemplating the future, have endeavored to improve upon their scientific and technological potentials. Not the least of these efforts has been in the direction of educating more and more of the youth of the two countries to intellectual preeminence in these fields.

In making a judgment on the matter, it is also necessary to take into account certain specializations built up in the Western World, but not necessarily situated in the United States. Thus, the United Kingdom is generally recognized as preeminent in the area of radioastronomy, and this strength may readily be allocated to the West.

Certain conclusions may be reached. Although Soviet and Western scientific and technological bases possess different historical antecedents, at the present both bases are substantial.⁷² In the future there will be many challenging and significant achievements flowing from each area. The West is aware of the nature of the challenge which has been offered, and since the challenge so vitally affects political and security considerations, it is clear that no stone will be left unturned in an effort to advance more rapidly than the Soviets.

Western planning is based on the assumption that its more even and broader base, coupled with its more mature technological experience, will enable it to prevail. However, the appropriate management of the Western effort will itself be of primary significance, since the Soviets have demonstrated, at least on a short run basis, the

⁷¹ *Ibid.*, at 204.

⁷² During the decade since Stalin the Soviets have advanced from a primitive to an advanced stage and "has emerged as a major scientific power." Ten years ago "few people outside the Soviet Union regarded that country as a serious contender in the field of scientific capabilities." Harry Schwartz, "Ten Years after Stalin," *New York Times*, Mar. 5, 1963, p. 6.

practicality of concentrating on specific scientific and technological parameters of the space race. As has been observed by one space strategist "It would be folly to deny * * * that the allies' estimates of the balance of power *in the future* are based in part upon the expectation that Western science and technology will obtain and maintain a decisive lead over the Soviet bloc."⁷³

The reasons for expecting continued qualitative leadership by the West are diverse. The commitment to freedom is a more enduring base upon which to construct excellence than a commitment to absolutism. The economic resources of the West are more substantial than those of the Soviets, and tremendous amounts of money are being directed toward scientific and technological pursuits by government, private industry, research foundations, and universities. Broad policy has been clarified, and this policy calls for victory in the space race. The significance of this race is well understood in the United States, and while taking into account occasional doubts respecting the substance of U.S. policy, there is general agreement that the American public supports the significance of being first in the space race. The economic implications of the space race are generally understood, and government spending in this area has contributed materially to the level of employment in the United States. In the United States, it has been proven possible to modify the direction of productive effort rapidly, as evidenced by the birth and rapid development of the electronic industry after 1930. This illustrates not only ingenuity in a creative sense, but it also demonstrates the ability of the United States to excel in any complex subject to which it devotes the requisite effort. In this connection the value of the free enterprise system is of central importance.⁷⁴

Kilmarx suggests numerous reasons for Soviet advancement in scientific and technological capabilities. Not the least of the Soviet attributes is the factor of centralized control for planning, direction, operation, and management. He points out that the Soviets have given a "very high priority * * * [to a search] for scientific and technological breakthrough with weapons applications * * *"⁷⁵ The Soviet effort is not unique.

In conclusion it can be stated generally that the United States continues to have a reasonable qualitative leadership over the Soviets

⁷³ Goldsen, *Outer Space and the International Scene* 3 (1959).

⁷⁴ RADM J. P. Monroe, USN, "The Navy in Space," 5 *Navy* 9 (1962). He points out the close connection between freedom for science and freedom for enterprise generally.

⁷⁵ Kilmarx, *supra* note 52, at 203.

in the scientific and technological aspects of space. Certainly, it cannot be concluded that the Soviets, in any significant area of the space race, possess a military advantage, although their larger-booster capability does constitute an exploitable prestige factor.

If this be true, then the inaugural remarks of President Kennedy on January 6, 1961, are particularly pertinent. It will be recalled that he said:

To those nations who would make themselves our adversary, we offer not a pledge but a request: that both sides begin anew the quest for peace, before the dark powers of destruction unleashed by science engulf all humanity in planned or accidental self-destruction.

Let both sides seek to invoke the wonders of science instead of its terrors. Together let us explore the stars, conquer the deserts, eradicate disease, tap the ocean depths, and encourage the arts and commerce.⁷⁶

Man's important activities must be subject to law and order. Man's use of space, either as presently understood or as his imaginative ingenuity will in the future direct him, is destined to be for important purposes. In view of the total capabilities of the United States and the Western World in space, and of principal importance its generally superior scientific and technological capabilities and potential, it may be concluded that the United States would not be taking undue risks in maintaining a policy permitting the extension of law to space uses.⁷⁷ It must be conceded that national policies must be based upon a foundation of power which is adequate to the enforcement of such policies. There is no evidence which would support the view that the United States and the Western World would be unable to enforce a policy of requiring conformity to the rule of law in space. The rule of law has brought untold benefits to mankind. It would appear that the burden of proof is on those who would forestall or unduly restrict the extension of the rule of law to man's activities in space.

b. *Political Approaches to the Law of Outer Space*

The emerging law of outer space reflects the multiple international and national forces of our times. It also reflects the search for a

⁷⁶ John F. Kennedy, "Inaugural Address," 44 *Department of State Bulletin* 176 (1961).

⁷⁷ For an analysis of the impact of technology on the making of policy, see Mayo, "The New Technology and National Goals: Some Implications for Legal-Policy Decision Making," 37 *Notre Dame Lawyer* 33-69 (1961).

community of interests in the use of space, but at the same time there is clearly an admixture of motives and interests observable within the decisional forum. Inconsistencies within the political ranks of a given nation are observable, and patently obvious is the difference of attitude and approach on the part of scientists on the one hand and the typical political-legal leader on the other. One of the most notable contrasts has been the splendid scientific cooperation in the peaceful uses of outer space and the relatively puny formal legal accomplishments realized at the international bargaining table.

Formal public international efforts to develop a law of outer space have been located principally at the United Nations. Beginning in 1958, the General Assembly adopted Resolution 1348 (XIII) on the Peaceful Uses of Outer Space, by a vote of 53 to 9, with 19 abstentions. Subsequently the General Assembly unanimously agreed on four resolutions all entitled "International Co-operation in the Peaceful Uses of Outer Space:" on December 12, 1959; on December 20, 1961; on December 19, 1962; and on December 24, 1963.⁷⁸ The United States, in the words of its Permanent Representative to the United Nations, Henry Cabot Lodge, Jr., from at least as early as January 12, 1957, has supported as an objective the use of outer space "exclusively * * * [for] peaceful and scientific purposes * * * "⁷⁹ Additionally, the United States Memorandum submitted to the First Committee of the General Assembly on the above date, promulgated U.S. policy as one of cooperation through inspection, participation, and control.

The 1958 United Nations Resolution 1348 (XIII) called for a report by an *ad hoc* committee as to the United Nations activities and resources relating to the peaceful uses of outer space, and on "the nature of legal problems which may arise in the carrying out of programs to explore outer space."⁸⁰

⁷⁸ The 1959 resolution was assigned number 1472 (XVI), the 1961 resolution was assigned number 1721 (XVI), the 1962 resolution was assigned number 1802 (XVII), and the 1963 resolution was assigned number 1962 (XVIII), by the General Assembly. These resolutions are set out in the Appendix as Annex Nos. 1, 2, 3, and 4. The legal significance of United Nations action and of these resolutions is considered *infra* at pages 192-224.

⁷⁹ Legal Problems of Space Exploration, *supra* note 10, Chapter I, at 990. II *Documents on Disarmament, 1945-1959*, 733 (1960). See Annex 5, *infra*, at 452. On November 14, 1957, the General Assembly adopted Resolution 1148 (XII) which urged that States following a disarmament agreement would engage in a joint study of an "inspection system designed to ensure that the sending of objects through outer space shall be exclusively for peaceful and scientific purposes." See Annex 6, *infra*, at 455.

⁸⁰ *Ibid.*, 1000. See Annex 7, *infra*, at 456.

The 1959 Resolution 1472 (XIV) established a Committee to review, study, and report on "practical and feasible means for giving effect to programmes in the peaceful uses of outer space which could appropriately be taken under United Nations auspices * * *" ⁸¹ Further, it requested the Committee to "study the nature of legal problems which may arise from the exploration of outer space." ⁸²

The 1961 Resolution 1721 (XVI) commended to States "for their guidance in the exploration and use of outer space the following principles: (a) International law, including the Charter of the United Nations, applies to outer space and celestial bodies; (b) Outer space and celestial bodies are free for exploration and use by all States in conformity with international law and are not subject to national appropriation." ⁸³ The Resolution also invited the Committee to "study and report on the legal problems which may arise from the exploration and use of outer space." ⁸⁴

The 1962 Resolution 1802 (XVII) asserted the belief "that the activities of States in the exploration and use of outer space should be carried out in conformity with international law including the Charter of the United Nations, in the interest of friendly relations among nations." ⁸⁵ It called for legal progress in a number of specific and important areas.

The 1963 Resolution 1962 (XVIII) adopted the views contained in the foregoing resolutions. Its importance must be measured not only by its acceptance of general principles but also by significant provisions relating to the operational aspects of space vehicles. ⁸⁶

It is interesting to note that the theme of "peaceful uses" runs through all of the foregoing resolutions. Thus, the 1958 Resolution recognized "the common interest of mankind in outer space and that it is the common aim that it should be used for peaceful purposes only." The 1959 Resolution recognized "the common interest of mankind as a whole in furthering the peaceful uses of outer space." The 1961 Resolution extended "the common interest of mankind in furthering the peaceful uses of outer space," by recognizing the further "urgent need to strengthen international cooperation in this important field." The 1962 Resolution served the same purpose by recalling the 1961 position favoring "international co-operation in the peace-

⁸¹ See Annex 1, at p. 441.

⁸² *Ibid.*

⁸³ See Annex 2, at p. 443.

⁸⁴ *Ibid.*

⁸⁵ See Annex 3, at p. 446.

⁸⁶ See Annex 4, at p. 450.

ful uses of outer space." The 1963 Resolution maintained continuity with the past by "recognizing the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes."

The position of the United States throughout this period has been one of active general support of the above resolutions. At the same time that the United States has sought clarification of general legal principles applicable to space, it has also advanced a draft proposal "On Assistance to and Return of Space Vehicles and Personnel,"⁸⁷ a draft proposal "On Liability for Space Vehicle Accidents,"⁸⁸ and a draft "Declaration of Principles Relating to the Exploration and Use of Outer Space."⁸⁹

The top officers of the executive department of the Government have, during the administrations of President Eisenhower and President Kennedy, given complete support to the propositions that law was applicable to space, that space should be used for peaceful purposes, and that there was a need to be selective in the application of legal principles and rules to outer space. The general resolutions supported at the United Nations by the United States illustrate the broad and substantive approach to peaceful legal uses. The Declaration of Principles noted above, and put forward on December 8, 1962, identifies broad principles having appeal to the United States. At the same time that the United States has advocated the selection of broad principles, it has also assigned high priorities to proposed specific rules, as reflected in its drafts for assistance and return, and on liability.

The general approach of the United States may be illustrated by representative statements on the part of its President and persons holding the highest posts in the Departments of State and Defense. Thus, early in January of 1958, President Eisenhower wrote to Premier Bulganin proposing that "we agree that outer space should be used only for peaceful purposes."⁹⁰ Later in 1958, the Legal Adviser to the Department of State pointed to the importance of insuring that outer space be used for peaceful purposes only, and indicated that this involved defense and foreign policy considerations of the utmost importance.⁹¹ Then, in September, 1958, Ambassador Lodge,

⁸⁷ U.N. Doc. A/AC.105/L.4; U.N. Doc. A/5181 4-5 (1962). See Annex 8 at p. 458.

⁸⁸ U.N. Doc. A/AC.105/L.5; U.N. Doc. A/5181 5-6 (1962). See Annex 9 at p. 458.

⁸⁹ U.N. Doc. A/C.1/881 (1962). See Annex 10 at p. 459.

⁹⁰ 38 *Department of State Bulletin* 122 (1958).

⁹¹ Becker, "Major Aspects of the Problem of Outer Space," 38 *Department of State Bulletin* 962-963 (1958). See also 39 *Ibid.*, 416-420 (1958).

in seeking the inclusion of international cooperation in the field of outer space in the agenda of the thirteenth General Assembly, filed a memorandum calling for support of "the principle of the peaceful utilization of outer space * * *" ⁹² This was followed by an address to the General Assembly by Secretary of State Dulles on September 18, 1958, in which he proposed a draft resolution for Assembly action in which he indicated that the "United States believes that the United Nations should take immediate steps to prepare for a fruitful program on international cooperation in the peaceful uses of outer space." ⁹³ Thus, during 1958, admitting that policy considerations were productive of problems respecting outer space, the United States official position supported peaceful uses, utilization for "constructive pursuits," and an employment dedicated to the "maximum benefit to humanity." ⁹⁴ The avenue whereby such goals were to be achieved was international cooperation.⁹⁵

From 1958 on, with the growing appreciation of the substantial benefits to mankind which could be realized through the broadest possible uses of space, the official policy of the United States continued to support the principle of peaceful uses. Thus, on May 6, 1959, Ambassador Lodge in appearing before the United Nations Ad Hoc Committee on the Peaceful Uses of Outer Space stated that it was his country's task "to help chart for the United Nations a course of cooperation among nations in the use of outer space for peace." ⁹⁶

⁹² General Assembly *Official Records: Thirteenth Session, Annexes, Agenda Item 60, 4* (1958). See Annex 11 at p. 460. This proposal was explained by Ambassador Lodge in a speech to the American Legion on September 2, 1958, where he stated: "Specifically, the United States will propose a program for international cooperation in the field of space. A practical program for international cooperation in the scientific and peaceful study and exploration of outer space must be set up." Through such an effort it was to be hoped that the United States would "increase the prospects that outer space will not be used for [aggressive] military purposes." 39 *Department of State Bulletin* 451 (1958).

⁹³ Dulles, "Problems of Peace and Progress," 39 *Department of State Bulletin* 529 (1958). See Annex 12 at p. 462.

⁹⁴ *Ibid.*

⁹⁵ *Ibid.*

⁹⁶ 40 *Department of State Bulletin* 883 (1959). In the State of the Union Address of 1959 President Eisenhower said "We seek to prevent war at any place and in any dimension." *Ibid.* at 116. It was also during 1959 that Francis O. Wilcox, Assistant Secretary of State for International Organization Affairs in appearing before the House Committee on Science and Technology, said "It is my hope that the United Nations, by fostering cooperative efforts in the peaceful uses of outer space, will avoid the projection into man's newest frontier of those harmful international rivalries which exist on this earth." *Ibid.* at 403 (1959).

The situation during 1960 was well summarized by Under-Secretary of State Merchant in testimony before the House Committee on Science and Astronautics. He said:

Even before the launching of the first earth satellite, the President invited the Soviet Government to join in an effort to find ways to assure that outer space be used for peaceful purposes only. Ambassador Lodge has reiterated this proposal on appropriate occasions in the United Nations. The United States has thus made clear its desire, either as a part of or separately from the more inclusive efforts to establish control of armaments, to study and explore together with the Soviet Union and other nations what might be done to accomplish this objective.

Meanwhile we have sought to proceed with more immediately attainable consultative and cooperative activities related to the peaceful uses themselves. In doing so, we have recognized that outer space, by its very nature, is not the concern of one nation or of only a few. It is of interest to all.⁹⁷

The continuing policy of the United States was described by President Kennedy in his address to the United Nations on September 25, 1961. In recognizing the need for the application of law to man's activities in outer space, he called for the implementation through the United Nations of a four-point program. American policy, to be carried out through the United Nations, was to consist of "extending the United Nations Charter to the limits of man's exploration in the Universe, reserving outer space for peaceful use, prohibiting weapons of mass destruction in space or on celestial bodies, and opening the mysteries and benefits of space to every nation."⁹⁸ In addition to these four basic principles the President also acknowledged the need for international cooperation in certain specific areas, e.g., weather prediction and control, and a global communications system.

During 1961 and 1962, practical efforts were made by the United States to implement the four major proposals of President Kennedy, as well as the two supplementary ones. Thus, in addressing Committee I at the United Nations on December 4, 1961, Ambassador Adlai E. Stevenson urged international space cooperation for the benefit of mankind. His four-point program closely paralleled that put forward by the President. He advocated a "regime of law and order in outer space," "the open and orderly conduct of outer space activities," "a worldwide effort under the auspices of the United Nations

⁹⁷ Merchant, *op. cit.*, *supra* note 42, at 214.

⁹⁸ 44 *Department of State Bulletin* 622 (1961).

in weather research and weather prediction," and "the establishment of a global system of communication satellites." ⁹⁹ Although no direct reference was made to the President's policy of "reserving outer space for peaceful use," yet all of the points put forward may be subsumed under this general heading.

A somewhat different restatement of the President's four-point program was suggested by Richard N. Gardner, Deputy Assistant Secretary of State for International Organization Affairs, on March 10, 1962. According to him, the program "called for a regime of law and order in outer space, the registration of satellites and space probes [which had been considered by Ambassador Stevenson as a subsidiary point to his 'open and orderly conduct of outer space activities']" ¹⁰⁰ with the United Nations, a worldwide program of weather research and weather forecasting, and international cooperation in the establishment of a global system of communications satellites." ¹⁰¹

The fact that American policy toward outer space was undergoing a modest reappraisal was illustrated by Secretary of State Rusk's emphasis in a speech entitled "New Frontiers of Science, Space, and Foreign Policy," delivered on May 25, 1962. He advanced six goals, as follows:

"First. We think that outer space should be free for use by all nations as long as the use is consistent with the principles of the United Nations Charter.

Second. We think that the regime of law obtaining among the nations on earth must be extended and improved as it pertains to outer space.

Third. We think that there must be devised a clear and recognized means for the identification of rights and the adjudication of disputes as between nations conducting activities in outer space. We require, for example, mechanisms to assist in the rescue of astronauts who land unexpectedly in foreign territory and for the determination of liability for injuries or damage caused by objects returning from outer space.

Fourth. We think that useful applications of space technology, such as communication and meteorological satellites, should be available to all nations, particularly the less developed

⁹⁹ "International Cooperation in the Peaceful Uses of Outer Space," 46 *Department of State Bulletin* 181-183 (1962).

¹⁰⁰ *Ibid.*, at 182.

¹⁰¹ "Extending Law into Outer Space," *Ibid.*, at 587.

nations, commensurate with a realistic assessment of their needs and their ability to commit resources to the use of these applications.

Fifth. We stand for the proposition that opportunities to participate in outer space activities should be open to all nations commensurate with their ability and willingness to cooperate constructively.

Sixth. We have proposed, as part of our disarmament proposals now being discussed at Geneva, that, under adequate inspection and control, the placing in orbit of weapons of mass destruction be prohibited.”¹⁰²

Testimony before subcommittees of the House Committee on Science and Astronautics in 1962, illustrated specific areas in which cooperation for peaceful purposes might be implemented. On September 11, 1962, Mr. Gardner emphasized the use of meteorological satellites for cooperative programs in the peaceful use of outer space. He said “Here is a program in the peaceful uses of outer space which is not only important to us nationally, for economic and social reasons, but in addition is recognized as vitally important to the daily needs of people in all countries.”¹⁰³

Mr. G. Griffith Johnson, Assistant Secretary of State for Economic Affairs, foresaw similar national and international gains through the development of communications satellites. It was his view that the exploitation of outer space for peaceful purposes in the field of communications would be furthered by a truly global system based on international cooperative programs.¹⁰⁴

The position of the United States at the close of 1962 was clearly stated before the First Committee of the United Nations by Senator Albert Gore on December 3. After noting that the United States through the United Nations had cooperated in the goal “that man’s conduct in outer space will be reasonably orderly, certainly peaceful, and in the best interests of all nations and all peoples * * * ”,¹⁰⁵ he asserted that there was an ongoing requirement for the “constructing of adequate assurances that the exploration and use of outer space will be for peaceful purposes. My government wishes its views on the

¹⁰² 46 *Department of State Bulletin* 933 (1962).

¹⁰³ 47 *Ibid.*, 500 (1962).

¹⁰⁴ *Ibid.*, at 570.

¹⁰⁵ U.N. Doc. A/C.1/PV. 1289 8-10 (1962). A similar viewpoint was expressed by the American Representative at the March 19, 1962 meeting of the Committee on the Peaceful Uses of Outer Space. Mr. Plimpton called for “international cooperation in the peaceful use of outer space in the fateful years that are ahead of us.” U.N. Doc. A/AC.105/PV.2 26 (1962).

most pressing aspects of this problem explicitly stated and understood. It is the view of the United States that outer space should be used only for peaceful—that is, non-aggressive and beneficial—purposes. The question of military activities in space cannot be divorced from the question of military activities on earth.”¹⁰⁶ Throughout the space age, then, it will be seen that the United States has asserted policies built on peaceful uses and international cooperation. Underlying these considerations have been the expectation that wide and mutual benefits would result.

The views put forward by or on behalf of the executive department of the government have also been proclaimed in the Congress. Thus, in June, 1958, Congressman John W. McCormack of Massachusetts introduced House Concurrent Resolution 332, which expressed “the devout wish of all peoples everywhere, in every nation, in every environment that the exploration of outer space shall be by peaceful means and shall be dedicated to peaceful purposes.”¹⁰⁷ The National Aeronautics and Space Act of 1958, adopted on July 29, 1958, took this viewpoint into account in detailing the following objective as being one of those pertinent to the Act:

(4) The establishment of long-range studies of the potential benefits to be gained from, the opportunities for, and the problems involved in the utilization of aeronautical and space activities for peaceful and scientific purposes * * *¹⁰⁸

The Act made it clear that there was no inconsistency between the goal of peaceful and scientific uses of outer space and the national requirement for national security. Thus, the Act made reference to the role of the Department of Defense in dealing with activities “peculiar to or primarily associated with the development of weapons systems, military operations, or the defense of the United States (including the research and development necessary to make effective provision for the defense of the United States) * * *”¹⁰⁹ It was under these circumstances that the Act announced the policy of the United States to be in support of devoting outer space activities to peaceful purposes beneficial to all mankind.

¹⁰⁶ *Ibid.*, at 13. Compare, Gardner, “Cooperation in Outer Space,” 41 *Foreign Affairs* 359 (1963), “The test of the legitimacy of a particular use of outer space is not whether it is military or non-military, but whether it is peaceful or aggressive. There is, in any event, no workable dividing line between military and non-military uses of space.” He asserted that peaceful uses must be defensive and beneficial.

¹⁰⁷ 72 Stat. H 13 (1958).

¹⁰⁸ 72 Stat. 426 (1958).

¹⁰⁹ *Ibid.*

One of the legal draftsmen of the statute has stated that the word "peaceful" in the Act, "means nonaggressive rather than 'nonmilitary.'" ¹¹⁰ He added that this interpretation of the language expressed the intent of the Congress, and stated "The same meaning of the term may be found in international law. It also appears to be the most reasonable interpretation. If 'peaceful' is understood to mean 'nonaggressive,' * * * the legal control of outer space will be greatly facilitated." ¹¹¹

It is worth noting that the American Bar Association's Committee on the Law of Outer Space, 1959, accepted the same viewpoint. The report provided:

In the sense of the [United Nations] Charter, and in international law generally, [the term 'peaceful'] * * * is employed in contradistinction to 'aggressive.' * * * Thus any use of space which did not itself constitute an attack upon, or threat against, the territorial integrity and independence of another State would be permissible * * * ¹¹²

Both of these points have been noted by Spencer M. Beresford, Special Counsel, House Committee on Science and Astronautics, from 1958 through 1960. In acknowledging the hybrid military-peaceful potentialities of almost all spacecraft, he stated that "As a practical matter, the range of activities in outer space will be narrow indeed if all that lend themselves to military purposes are prohibited." ¹¹³ To require the concept of peaceful uses to include only those uses exclusively dedicated or potentially so dedicated to nonmilitary purposes would so gravely restrict the practical uses of outer space as to deny mankind the many benefits now open to him.

The same conclusion has been reached by a commentator having an official connection with the National Aeronautics and Space Council.

¹¹⁰ Feldman, "The Report of the United Nations Legal Committee on the Peaceful Uses of Outer Space: A Provisional Appraisal," Second Colloquium, *supra* note 10, at 23.

¹¹¹ *Ibid.* He offered as a tentative definition of aggressive space vehicles and activities "those that can cause direct harm to objects on the earth's surface." As previously indicated, aggression is characterized by intent and conduct reflecting such intent.

¹¹² *Report of the Committee on the Law of Outer Space*, American Bar Association 11 (1959). For the ABA's view that aggressive conduct must be distinguished from self-defense and security rights, see the 1959 resolutions adopted by the House of Delegates. 84 *Annual Report of the American Bar Association* 175-176 (1959); *Legal Problems of Space Exploration*, *supra* note 10, at 595-596.

¹¹³ "Surveillance Aircraft and Satellites: A Problem of International Law," 27 *The Journal of Air Law and Commerce* 109 (1960).

In pointing to the duality of purpose served by the 1958 statute, Dr. Edward C. Welsh has emphasized the fact that the policy language of the Act ("activities in space should be devoted to peaceful purposes for the benefit of all mankind") "does not mean that space has no military or defense uses."¹¹⁴ Thus, he made the point that "Nothing is more essential for peace than the capability to discourage or deter attack. In my view, we do *not* have a division between peaceful and nonpeaceful objectives for space. Rather, *we have space missions to help keep the peace, and space missions to help increase our ability to live well in peace.*"¹¹⁵

Nevertheless, there are strong pressures against the sending into outer space of the mass destruction type weapon. Reference has been made above to President Kennedy's 1961 address to the United Nations in which he asserted, as one of America's major policies for space, that weapons of mass destruction be prohibited in space or on celestial bodies. Other U.S. officials have enunciated this view on several occasions. The substantial efforts made by the United States to prevent the placing of weapons of mass destruction into orbit during the first stage of the disarmament process are well known. The policy of the United States was restated by Senator Gore at the United Nations in December of 1962: "Even though it is now feasible, the United States has no intention of placing weapons of mass destruction in orbit unless compelled to do so by actions of the Soviet Union."¹¹⁶ Thus, it is clear that whether or not outer space will be

¹¹⁴ "Peaceful Purposes: Some Realistic Definitions," 44 *Air Force & Space Digest* 73 (1961). The Secretary of Defense in reporting on U.S. military space programs has indicated that "The exploitation of outer space as a possible environment for basic defense missions is receiving increased attention and activities in this field are steadily expanding." *Annual Report for Fiscal Year, 1961*, 20 (1962).

¹¹⁵ *Ibid.*

¹¹⁶ U.N. Doc. A/C/1/PV. 1289, 16. This viewpoint was carried even further by a group of British international lawyers in 1962, when, in putting forward a "Draft Code of Rules on the Exploration and Uses of Outer Space," they provided "No spacecraft carrying any type of warhead or otherwise designed as a weapon for use against targets on the earth or in the airspace, shall be placed in orbit around the earth, or celestial body, or be carried in or launched from any space station or celestial body." In commenting on this rule, the group added "The prohibition is limited to spacecraft designed as weapons whether of conventional, nuclear, chemical or bacteriological warfare. It does not extend to surveillance or reconnaissance satellites, which may primarily serve military purposes, yet have the advantage that they contribute to an 'open world' and so increase rather than diminish security." The *David Davies Memorial Institute of International Studies*, 12 (n.d.). The proposal submitted by the United States to the United Nations on Sept. 25, 1961 favoring general

reserved exclusively for peaceful and scientific uses has not been ultimately resolved. While it is generally recognized that space vehicles do possess hybrid characteristics, that is, they may be used either for peaceful and scientific purposes or they may be used for aggressive military purposes, this fact alone does not prevent the use of such devices. Further, the military use of such vehicles, when reasonably used for good or proper purposes, e.g., self-defense or security, is not inhibited. It is only when such devices are employed for aggressive purposes, including as weapons of mass destruction, that United States policy and much of mankind has come to regard them as objectionable. It is now coming to be understood that space vehicles are subject to international law and to the terms of the United Nations Charter.

c. Policy Approaches in the United States to a Law of Outer Space

American policy respecting outer space, despite the general awareness of the facts sets forth above, has been divided between two opposing schools of thought. The disagreement is not as to goals so much as it is a question of how American interests might be best advanced and protected.

When a subject is regarded as novel there is an almost relentless tendency to advocate caution in treating it. When the subject is better understood there is a noticeable tendency to move more rapidly to resolve remaining uncertainties. Several years ago the counsels of caution were preponderate, and the "wait and see" point of view seemed to prevail. However, with greater experience a new

and complete disarmament, seeking to promote the peaceful use of outer space during stage I, provided "The placing into orbit or stationing in outer space of weapons capable of producing mass destruction shall be prohibited." *U.N. Doc. A/4891*, 45 *Department of State Bulletin* 652 (1961). It is also noteworthy that during the height of the Cuban crisis in 1962, President Kennedy wrote to Premier Khrushchev, "I think we should give priority to questions relating to the proliferation of nuclear weapons, on earth and in outer space, and to the great effort for a nuclear test ban." *New York Times*, October 29, 1962. See also Kennedy, "The Nuclear Test Ban Treaty: A Step Toward Peace," 49 *Department of State Bulletin* 234 (1963). The treaty text is set forth at pp. 239-240.

The foregoing attitudes culminated on October 17, 1963, in General Assembly Resolution 1884 (XVIII). This Resolution entitled "Question of general and complete disarmament," after calling attention to the previously asserted belief that "the exploration and use of outer space should be only for the betterment of mankind" solemnly called upon all states to refrain from placing weapons of mass destruction in outer space or on celestial bodies. *U.N. Doc. A/RES/1884 (XVIII)*. See Annex 13 at p. 462.

approach is gaining acceptance. This view was portrayed by Senator Gore at the United Nations in 1962. He said:

Outer space is not a new subject; it is just a new place in which all the old subjects come up. The things that go on in space are intimately related to the things that go on here on earth. It would be naive to suppose that we can insulate outer space from other aspects of human existence.¹¹⁷

One commentator observed in 1960, that perhaps the State Department's position of "wait and see" may have "already served its full useful period."¹¹⁸ Recently a high Department of State official has called for international "cooperative arrangements on specific functional problems," but not for an outer space "Congress of Vienna."¹¹⁹ It is noteworthy that the debates at the United Nations have disclosed several opposing points of view as to the means whereby the law of outer space might best develop. Thus, there are numerous proponents of the view that the United Nations should prepare, in addition to those already agreed to, a rather extensive statement of legal principles for outer space. Some nations have advocated the preparation of a detailed draft convention, which would contain all the specific rules characteristic of a prolix code. Other points of view, including that of the United States, call for agreement on an effective number of basic principles, subject to additional agreement on a restricted number of detailed rules which reflect the practical needs of the current space age. This would leave to the future additional detailed rules and would make them depend on a realistic demand for their existence.¹²⁰

The supreme danger confronting legal policy-makers is that an effort dedicated to providing answers may sometimes result in overly simple answers to complex and difficult problems. A further danger, in the eyes of some, is the effort to provide answers at all, on the score that there are not ultimate solutions and that the attempt to provide answers which are not real is both retrogressive and misleading to the naive and unsuspecting.

¹¹⁷ U.N. Doc. A/C/1/PV. 1289, 16. Compare Galloway, "The United Nations Ad Hoc Committee on the Peaceful Uses of Outer Space," *Second Colloquium, supra* note 10, at 34: "Outer space has simply been added as a new environment into which existing and projected human activities are being extended."

¹¹⁸ Roberts, "Outer Space and National Sovereignty," 12 *Air University Quarterly Review* 62 (1960).

¹¹⁹ Gardner, *supra* note 106, at 360

¹²⁰ See pp. 158-174, 432-433 *infra* in which the debates and points of view put forward at the United Nations are discussed in detail.

The reluctance of policy-makers to provide real answers to serious legal questions is, in part, understandable. Such makers of policy are managers of policy, and if their answers are too sharp and precise, they of course may, in an operational situation and in a logical sense, be impaled upon their prior rationale. It is always more difficult to explain away a previously given answer than to be able to manage affairs absent such self-imposed limitations. Admittedly, the existence of present answers restricts the freedom of action of the policy-manager, if it could be assumed that constant improvisation is a satisfactory alternative means of proceeding.

With the emergence of an international law of outer space, the American—as well as his foreign counterpart—is confronted by just these problems. There is, in this connection, an additional point to be noted. No answer—whether improvised or based on the most careful study and analysis—can hope to be ultimate. In particular, answers to social and hence political and legal matters must take into account the actual conditions of life in which they must be used. Hence, an unwillingness to provide answers on the score that they will not be definitive would hardly seem to be a reason for not seeking answers appropriate to a given time and place.

Such an approach need not suggest that the time has arrived for the preparation of a comprehensive code on the law of outer space. But, on the other hand, it does not suggest that the correct approach is to await the existence of hard, practical problems before attention is given to resolving them. In short, the case by case method—common law approach—has no greater intrinsic claim to being the sole or best approach than the serious and practical preparation of a comprehensive code. Experience has demonstrated that the creation of law in the civil law countries is accomplished as effectively as in those countries following the common law tradition.

The principal reason for a “wait and see” approach put forward by commentators, who have interested themselves in the emerging law of outer space, has been that all of the essential facts—particularly scientific facts—have not been made available. It should be noted, however, that during the past ten years a more complete understanding of space capabilities has been achieved.

Other more activistically inclined commentators have argued that outer space law is more a political than a scientific problem, and that its principles and rules “like much else in an indeterminate universe, depend on the order of experience in space as well as on the changing political context.”¹²¹ Many commentators have remarked about

¹²¹ McDougal and Lipson, “Perspectives for a Law of Outer Space,” 52 *A.J.I.L.* 430 (1958).

the extensive gap between scientific and technological achievement and the condition of the law.¹²² They favor closing the gap through the promulgation of what they regard as present, practical, common sense rules. Further, they admit the existence of binding principles and rules. Rather than accepting the policy of deferring to science and technology, and since the day-to-day operation of public affairs under given rules and principles is infrequently their concern, the proponents of this point of view favor a present affirmative role on the part of lawyers and political leaders in the formulation of the law.

Arguments for present action take several forms and have been voiced by theoreticians and practitioners alike. The principal reason advanced is that the creation of an adequate law for outer space is no longer in the area of theory "but a practical necessity."¹²³ The Secretary of State has seen in an emerging law of outer space a new challenge to "man's ability to organize his affairs with at least a modicum of good sense."¹²⁴ Some have noted that law does not appear to be keeping pace with scientific advances, and that there is a need for law to provide a peaceful setting for science, both at home and in the world at large.

Those who support the need for a present law of outer space fear the consequences of uncontrolled and haphazard expedients. This position was best put by Senator Kenneth B. Keating, who, in 1958, after expressing disapproval of the "wait and see" approach, urged:

World civilization has passed the point—again due to a rising Tempo in human affairs—where it can afford to sashay into Space without some anticipation of the consequences or permit the concept of Space regulation to 'just grow.'¹²⁵

Others deplore the social waste and resultant friction involved in taking corrective action after having harvested the fruitless results produced by earlier unconcern. This role of decision making in reverse has been described as involving five phases. At first, there is an effort to avoid giving any thought to the future, particularly if internationally difficult problems seem to be involved. Then, other nations with other interests move into the political vacuum and posit

¹²² See the articles in the various *Colloquia on the Law of Outer Space*, and the debates at the United Nations during 1961–1963.

¹²³ Robert D. Crane, "Law and Strategy in Space," 6 *Orbis* 281 (1962).

¹²⁴ Rusk, *supra* note 102, at 932–933. He added: "The right time to subject activities in space to international law and supervision is now, before possibly untoward developments occur."

¹²⁵ "Space Law and the Fourth Dimension of our Age," *Legal Problems of Space Exploration*, *supra* note 10, at 435.

affirmative policy attitudes, which may be, and often are, opposed to the interests of the slothful state. Then, there is sharp awakening on the part of the dormant, would-be, policy-maker. This is followed by substantial efforts to overcome past inactivity and to modify or set aside the results of earlier procrastination. Finally, this is followed by even larger efforts, with incumbent international friction, and with no positive assurance that more might be gained than would have been with an earlier mature and alert attitude. On the basis of this kind of analysis, the proponents of an adequate present law for outer space point out that goals cannot be "pondered or debated or deliberated endlessly * * * We can spend a lifetime pointing out the administrative complexities and problems involved. But while the problems are being debated, the opportunities may well be lost."¹²⁶

A long time member of the House Committee on Science and Astronautics, Congressman Overton Brooks, has summarized the present need for the establishment of general space law. He stated in 1961 "I believe we must proceed at once to develop the principles of space law and try to reach an early agreement on the scientific and commercial uses of space."¹²⁷ Subjects requiring immediate legal attention, according to Mr. Brooks, included traffic control, liability for damage, allocation of radio frequencies, and the prevention of interplanetary contamination, among others. Many of the same problems were noted by the American Bar Association in 1959, when it was calling for action in this field.¹²⁸

The present writer is of the view that the cautious counsels of "wait and see" served a constructive purpose for their time.¹²⁹ However, in view of the present tempo of demands for a clarification of the law of outer space, it now is clear that affirmative steps will have to be taken to formalize the law of outer space.

It should be emphasized that lawyers should not be unduly impressed with the physical novelty of outer space. While it is a new dimension for man's activities, there seems to be little doubt that man will conduct himself in space very much as he has on earth. The same values and the same problems will confront him. The law will be man-oriented. Any proper understanding of the law of outer space

¹²⁶ Watson, *supra* note 33, at 204.

¹²⁷ Brooks in Ramo, ed., *Peacetime Uses of Outer Space* 208 (1961).

¹²⁸ "Report of the Committee on Law of Outer Space—Recommendations: 1959," 1959 *Proceedings on the Section of International and Comparative Law* 215-233. This has been reproduced in *Legal Problems of Space Exploration*, *supra* note 10, at 571-594. Compare, Bloomfield, ed., *Outer Space* 150 (1962).

¹²⁹ These have been collected by Simeone, "Space—a Legal Vacuum," *Military Law Review*, April 1962, note 5, at p. 44.

must take into account man's needs and his prospective uses of outer space. He will continue to demand that space be available to him for all reasonable uses.

Thus, this book will have served one purpose if it helps move forward man's thinking on the law of outer space. The demand for something better than presently exists is a central fact. Just as the first book on the law of contracts has little semblance to today's publications on that subject, and just as today's interpretations of the law of contract may prove less than adequate for generations several times removed, so presumably it will be with this space law treatise. In fact, there is a good probability that there will be major differences between this analysis and other studies currently being undertaken.

That those of us who have been concerned with the emerging law of outer space should view its processes and substance somewhat differently is to be expected. For, as has been suggested, the policy considerations of this law are of more than usual importance. Through the ongoing competition in the market place of ideas, the views put forward here will confront other and differing views. The ultimate synthesis—dynamic though it will be—will be instructive to those who understand the processes and purposes of the law and to those, in particular, who will be called upon to apply and enlarge it.

The future space lawyer will be involved in a fascinating process. He will move as rapidly as he can—although more slowly than many will wish—and will give due attention to the following resources. He will examine custom and its influences. He will endeavor to select legal principles which affect his problem. He will seek meaningful international recommendations and declarations which promulgate such principles. He will be delighted with limited international agreements, and even more pleased with more general agreements. He will pursue the final objective of universal international agreements. During all of this time, he will seek to bring principles down to rules, and rules down to enforceable rules. In brief, he will seek the development of enough legal order in outer space to allow for the realization of his ongoing needs.

B. THE ESSENTIALS OF A MINIMUM PUBLIC ORDER

H. G. Wells wrote, somewhat prophetically, in 1895, "we have learned now that we cannot regard this planet as being fenced in and a secure abiding-place for man; we can never anticipate the unseen good or evil that may come upon us suddenly out of space."¹³⁰

¹³⁰ Wells, *The War of the Worlds* (Epilogue) (1895).

A minimum public order in world affairs requires an awareness of the existence of man's wide-ranging common interests. It demands the presence of political institutions equipped to provide a forum for discussions. This must necessarily be supplemented by forms of law and traditions of order. Forms of coercion must be available, and they must be not excessive to the needs of the society. A predictive tendency to rationality on the part of participants is highly desirable. All of these factors are bound together with the conviction that man does have a purpose in his being, and that this can be established by the universality of his needs.¹³¹

The public order takes appreciable form with the evolution of permitted and prohibited forms of conduct. It takes into account the importance of the Hohfeldian arrangement of correlatives and opposites. It thus seeks to contribute to the amelioration of friction and to the harmonization—or at least neutralization—of competing interests.

The world public order, in comparison with national public orders, is decentralized, relatively primitive, and much in need of development. Because of the relative ineffectiveness in some circumstances of the world public order, legitimate self-help and wrongful resort to unpermitted forms of coercion are more typical than within a national public order. But, by reason of the destructive capabilities of today's coercive forms, and the possibility of over-all loss rather than net gain as a result of their successful employment, the importance of the international legal-political forum now attracts greater significance.

Justice William O. Douglas of the United States Supreme Court has urged the development of a minimum of world order. He has written:

Mr. Justice Holmes said in 1895, 'Now, at least, and perhaps as long as man dwells upon the globe, his destiny is battle, and he has to take his chances with war.' This viewpoint has dominated men's thinking for centuries. Yet it deserves no enduring place in any decalogue. For man is capable of great cooperative efforts in peace as well as war. Love and the instinct for preservation of life—these are even deeper in man's character than violence.¹³²

This was made explicit by two authors who recently have pointed up the fact of common individual and national interests, both long and short term, in the establishment and continuation of a minimum

¹³¹ Jessup, *Transnational Law* 1-34 (1956).

¹³² Douglas, *The Rule of Law in World Affairs* 5 (1961).

world public order. After pointing out that "prohibition is the first indispensable law of any public order," they state that this requires that internationally "no change shall be effected through intense coercion and violence."¹³³

Several factors have contributed to a greater awareness of the need for practical processes and adequate rules of substantive behavior to avoid the alternative of violence. Within the social complex, as is equally true in nature, there are two basic forces—one positive and one negative. It is the function of the international lawyer to harness these two forces in such a fashion that men everywhere will come to recognize a mutuality of interests in deriving the maximum benefit from these forces. Corbett has stated the problem in these words: "The recognition and implementation of common values are the foundation and the business of society."¹³⁴

The negative force contributing to the mutuality of interests which demands a world public order is that of fear. The positive force is the product of many confidences stemming from a growing realization of mutual advantages which have derived from ever greater interdependency.

Julius Stone has called attention to the constructive force of fear by referring to man's modern quest for survival. Personal insecurities and anxieties may be attenuated through the establishment of a regime of law and order between peoples.¹³⁵ There can be no doubt that common fears of mass extermination lend much support to demands for a minimum world public order.

One can also build constructively upon an understanding of the kind of world in which we actually live. The scientific and technological revolution, as has been suggested, has triggered another revolution—the revolution of rising human expectations. The "have nots" have been made aware of human capabilities and of their prospects—often quite remote—of living like others live. The "haves" are in search of consumers to buy their products. The demands of trade and commerce have heightened contacts all around the globe. There have been demands for interchanges of goods, services, concepts, know-how, and—above all—ideas. With this there has been a demand for law and order so that the benefits of this decade's great material

¹³³ McDougal and Feliciano, *supra* note 8, at 170, 128–131; compare, Deutsch in Goldsen, ed., *International Political Implications of Activities in Outer Space* 181–182 (1960), and Dickinson, *Law and Peace* 1–31 (1951).

¹³⁴ Corbett, *Law and Society in the Relations of States* 300 (1951).

¹³⁵ Stone, *Quest for Survival* 1 (1961). He also warns that there is a danger of misleading people through the "rule of law" concept, for they may wrongfully assume that law will prevail in the absence of institutions suited to support it.

progress might be widely shared. Concurrently, there has been an expansion of a humanistically oriented philosophy, which urges that the "good life" is within the range of all.

In addition to material considerations are the moral ones, which are generally regarded as "essential to the vitality of all legal obligations."¹³⁶ Stone also emphasizes the view that "the essence of the rule of law ideal lies, therefore, not in technical law as such, but rather in the supremacy of certain ethical convictions, certain rules of decency prevalent in the community, and in the psychological fact that those who are at the apex of power share those convictions and feel bound to conform to them."¹³⁷ These, and other elements of the social complex, have an indelible effect on the law of outer space.

In summary, then, a worth-while approach to the international law of space depends upon the answer given to the question: What kind of world do we live in today? The answer must give due weight to the interrelatedness of the present world. This has in no small measure been brought about by the scientific and technological revolution. Mankind, in the age of the atom and the era of space, has been provided with challenges and responsibilities so awesome as to be almost different in kind from traditional problems.

But, it is not just a world of science and technology. It is also a world of morality and law. Where there are common moral purposes and a mutuality of interests, there may be not only international law and international organization, but there may be a relatively mature international legal-political system. The needs for a minimum world public order have been delineated. Foremost among these needs, other than the more ultimate goal of a legal order more comparable with a typically advanced national legal order, is an acceptable approach to the use of national force or coercion. Under international law a nation-state is permitted to pursue its security, defense, and peace-preserving needs. This function may also, under existing international law, be performed by a collection of nations. Internation-

¹³⁶ Brierly, *The Law of Nations* 45 (4th ed. 1949).

¹³⁷ Stone, *supra* note 135, at 4. He adds that those who wield large power in the world community must "share certain common ethical convictions as to the basic principles of decency between man and man. But clearly in the relations of States such shared convictions are the exception." p. 5. Compare, Elihu Root, who, in noting at a different time greater adherence to principles of decency, said: "There is an indefinite and almost mysterious influence exercised by the general opinion of the world. The greatest and strongest governments recognize this influence and act with reference to it." Quoted in I Hyde, *International Law* 14 (2nd rev. ed. 1945).

al law in order to ensure the safeguarding of essential values is seeking—both where a single nation-state or group of nation-states is involved—to develop conformity to the concept of proportionality as controlled by the overriding principle of reasonableness.

With the present proliferation of weapons possessing their vast volume of violence, the demand for a minimum world order has been accentuated. As the capacity for violence in all of the dimensions of the earth has grown, so also there has been a greater awareness of the need for practical processes to avoid the alternative of violence. Expectations for greater human self-realization, as a parallel cause, have contributed largely to the same demand.

The concept of the world rule of law has become a rallying point for the development of suitable legal principles and rules. When buttressed by practical institutions to administer them, this approach has much relevancy, and international law becomes a part of the totality of the concept of power.

Space, as man's newest usable environment, is in need of legal principles, rules, and processes beyond those presently existing, in order to assist him in achieving his expectations. From the very first it has been clear that law was pertinent to outer space. No matter what its other characteristics may be, it was never conceived of as a legal vacuum. Most will agree that in some small measure the development of an international law for space may contribute to a condition in which man's mutual interests will prosper.

The great practical dilemma will be to reconcile the use of space for scientific and peaceful purposes with other purposes. Military deterrence must be considered to be a nonaggressive, peace-supporting purpose, along with other defensive military uses. Sharing the use of space with other nations for these purposes is mutually beneficial. It permits greater exploitation of the space resource; it contributes to the common interests; and, it does not seek to impose any artificial limitations upon the single scientific and technological unit which space is conceded to be.

The foregoing conditions are essential to the existence of a minimum world order. Their realization would seem to meet the conditions laid down by Secretary of State Rusk when he enumerated the conditions of an agreeable community of nations. He said on May 25, 1962, "we seek a community of nations which recognize their interdependence, a community marked by increasing cooperation, by order, and by law."¹³⁸

¹³⁸ "New Frontiers of Science, Space, and Foreign Policy," *supra* note 102, at 935.

CHAPTER II

OUTER SPACE AND THE WORLD COMMUNITY

A. CHARACTERISTICS AND CAPABILITIES OF SPACE VEHICLES

1. Space Vehicles Distinguished from Other Devices

Reference has already been made in a general way to the great variety of uses to which the different kinds of space devices may be put. Diversity also marks the physical characteristics of devices which can be placed above the area commonly in use by conventional aircraft.

By aircraft I have in mind devices such as airplanes and balloons, which rely principally upon aerodynamic lift rather than rocket power to position themselves in the airspace. An aircraft means "any contrivance now known or hereafter invented, used or designed for navigation of or flight in the air."¹ Pursuant to Article 8 of the Chicago Convention on International Civil Aviation of 1944, no pilotless type aircraft "shall be flown without a pilot over the territory" of a contracting State without the special permission of the overflown State.² Since this provision has not been used—nor have other provisions or considerations—as a basis for a protest against the use of space devices, it can be argued that there are legal and political, as well as physical, differences between space devices and aircraft. This conclusion is supported by the fact that both the former Convention for the Regulation of Aerial Navigation, Paris, October 13, 1919,³ and Annex 7 of the Chicago Convention, 1944, provide that only machines capable of remaining in airspace by virtue of the properties of the air may be included within the term "aircraft."⁴

¹ Federal Aviation Act of 1958, 72 Stat. 731, Sec. 101. There is no consensus as to the legal limits of air or airspace. It should be noted, however, that its limits are subject more to political and legal considerations than to purely scientific ones. The same holds true for outer space.

² 61 Stat. 1180.

³ *International Commission for Aerial Navigation*, 1 (1938).

⁴ *Annex 7 Chicago Convention* 9. The effort to extend the coverage of international air law and the air law conventions to outer space and to space vehicles therein has been effectively repudiated and may now be regarded as a lost cause. See *U.N. Doc. A/5100*, 1721 (XVI) providing that outer space is free for exploration and use and not subject to national appropriation. Annex 2, *infra*, pp. 443-446.

A space vehicle has also been defined by the Congress. It means "missiles, satellites, and other space vehicles, manned and unmanned, together with related equipment, devices, components, and parts."⁵ A refinement on this definition was proposed in 1960 but was not enacted.⁶

Pursuant to the 1960 proposal, which took into account the fact that the number and variety of spacecraft have steadily increased since 1957, the term "spacecraft" was to mean "devices, manned and unmanned, which are designed to be placed into an orbit about the earth or into a trajectory to another celestial body, including all instrumentation, propulsion, and guidance contained therein." Launch vehicles were defined to mean "devices which propel and guide spacecraft into an orbit about the earth or into a trajectory to another celestial body and includes all stages of multistage rockets used for such purposes." The term "space vehicle" was defined to mean "spacecraft, launch vehicles, and all other vehicles, except ballistic missiles, capable of flight without support from or dependence upon the earth's atmosphere, together with related equipment, devices, components, and parts; * * *"⁷ The functional approach envisioned by these proposed definitions is a practical one, and these terms when employed hereafter will be used in the above sense.

Thus, satellites, space platforms, sounding rockets, and space probes would be representative of space vehicles, whereas military rockets would fall within the ballistic missile category. The term "space device" has been selected to cover space vehicles and ballistic missiles. A commercial, passenger-carrying, rocket-propelled, hypersonic space-glider device has been proposed for use within the not too distant future. It is contemplated that ninety-five percent of such a vehicle's trajectory would be within 12 to 60 miles of altitude, with the balance varying from ground zero to 100 miles.⁸ Hybrid capabilities, represented in the X-15 or the now defunct X-20 or Dyna-Soar type craft, defy easy classification between aircraft, space vehicle, and ballistic missile.

2. Satellites

Nonetheless, it is possible to identify significant differences between satellites and missiles, as well as important similarities. The distinguishing feature of a satellite is that it orbits. The lifetime of a satellite, for example, may be very long. Thus, Vanguard I, launched

⁵ National Aeronautics and Space Act of 1958, 72 Stat. 426, Sec. 103.

⁶ H. R. 9675, 86th Cong., 2nd Sess. (1960).

⁷ *Ibid.*

⁸ Faneuf, "Application of Space Science to Earth Travel," in Ramo, ed., *Peaceful Uses of Outer Space* 109 (1961).

on March 17, 1958, has a life expectancy of at least a century, and possibly much longer.⁹ It is "stationed" in space, whereas the missile has a relatively short life expectancy, since it is "passing through" space to a fixed terminal point. On the other hand, the satellite does have a fixed, if dynamic destination, for it was placed in an orbit possessing known parameters and in most instances is designed to return to earth. The missile's path is referred to as a trajectory, although it is equally correct to describe its movement as following a hyperbolic orbit. The satellite's orbit may be circular, elliptical, or parabolic. The difficulty entailed in achieving a perfectly circular orbit has resulted in most orbits following an elliptical course, with the point farthest from the earth being known as an apogee and the point nearest to the earth being referred to as the perigee.¹⁰

A satellite may be manned or unmanned. A ballistic missile on the other hand presumably will be unmanned, or if manned during a part of its life span, would not be manned at the time of its arrival on target. If manned it would be subject to manual guidance, but not otherwise. The satellite presumably would not serve as a weapon, *per se*, whereas the essential function of the missile would be for military purposes. However, this need not be the case, for the missile might take on the characteristics of a recoverable sounding rocket whose function is to acquire data which could be used as much for scientific and noncoercive purposes as for aggressive purposes. It will be recalled that military purposes fall into peaceful or aggressive categories dependent upon purpose or intent and conduct.¹¹

The satellite is subject to atmospheric drag if its perigee comes repeatedly near the earth. The missile, on the other hand, is not subject to a series of such atmospheric contacts.

The satellite generally ascends and descends over a rather extended territorial area and over a fairly substantial period of time, particularly in the case of a manned descent. It is in fairly close physical proximity to the subjacent land or sea area while engaged in making its descent. The missile, on the other hand, may have a very sharp upward movement followed by a very sharp retrograde movement, or it may pursue a fairly gradual trajectory. It will be present while in motion in areas used by both aircraft and space vehicles.

Satellites have traditionally been launched from land areas, whereas at the present missiles have been launched from land and water

⁹ One estimate places its estimated life at 1,000 years. 1 COSPAR Information Bulletin 3 (1960).

¹⁰ National Aeronautics and Space Administration, *The Challenge of Space Exploration* 16-18 (1959).

¹¹ *Supra*, Chapter I text at note 110, *et seq.*

areas. With the advent of operating space platforms, missiles, as well as satellites, will be launched from space. With the creation of serious technical problems based on size, sound, and contamination, it is likely that satellites will soon be launched from water areas.

Satellites are recovered wherever possible. Ballistic missiles may or may not be subject to recovery dependent on particular uses. ICBMs, for example, have achieved a "conventional status," and are now frequently "equated with terrestrial weapon systems."¹²

There are also striking similarities between satellites and ballistic missiles. Both must traverse airspace while en route to and in returning from outer space. Their respective launch requirements depend upon the weight of the item launched and the distance programmed. Both are essentially earth based. Both may be used for peaceful purposes. Both have been launched by military agencies in the United States and in the Soviet Union, which has no counterpart to the civilian National Aeronautics and Space Administration. Both are equipped to travel great distances and at tremendous speeds. They employ the same engines. Both are constructed so that they may be accurately returned to earth. Both are subject to remote control and are maneuverable after launch. They can send messages, be tracked, and engage in relay operations. They can be used for public and private purposes, particularly in the area of communications and transportation.

Both can supply valuable scientific data, although the satellite by reason of its longer life span provides a better facility than the rocket or missile. Their respective capabilities depend manifestly upon the instrumentation carried by each. Their observations, measurements, and calculations have provided data of great significance. As a new window to the world they have permitted comparative studies between ground-acquired data and that obtained in space.¹³

Representative American satellites include Explorer whose diverse objectives include scientific analysis of radiation fields, solar par-

¹² Horelick, *The Soviet Union and the Political Uses of Outer Space*, 34, at footnote 16 (1961).

¹³ Odishaw, "The Satellite Program for the International Geophysical Year," 35 *Department of State Bulletin* 280 (1956). The special quality of scientific data acquired through the use of rockets and other space vehicles has been noted by Berkner. He has pointed out that the murky qualities of the atmosphere have given man a monochromatic view of the universe. "By escaping into space, man has dropped the 'gray' monochromatic vision of the insect—he can now see the full glory of the whole range of color that the universe provides. His knowledge and comprehension and eventually his control of his environment will grow accordingly." "Earth Satellites and Foreign Policy," 36 *Foreign Affairs* 223 (1958).

ticles, solar winds, artificial radiation fields, and many others. Figure 1 illustrates the mean perigee, lowest perigee, and highest apogee of reported successful launches. Inclinations to the equator are depicted.

Transit satellites have been designed to develop scientific facts relating to the shape of the earth and are contributing to the perfecting of an all-weather navigational system. Figure 2 also illustrates perigees, apogees, and inclinations.

Discoverer satellites are used for general testing purposes, including observational and detection capabilities. Figure 3 illustrates perigees, apogees, and inclination characteristics.

The Mercury Atlas has been used successfully as the United States man-in-space prototype. Figure 4 indicates a typical launch pattern. Figure 5 illustrates perigees, apogees, and inclination characteristics. Figure 6 shows the orbital path followed by the Mercury Atlas, Sigma Seven, in its six orbits on October 3, 1962. Figure 7 suggests a typical descent pattern for this type of satellite.

Man's earth-bound distances are tiny when compared with distances in space. Figure 8 depicts the different regions of the physical atmosphere and outer space through which space vehicles and ballistic missiles pass.¹⁴ It will be noted that all transiting space devices, including spacecraft, launch vehicles, ballistic missiles, space probes, rockets, and other types of missiles—but not conventional aircraft—are equipped to use a substantial portion of the area indicated.

It will also be observed that while nomenclature for regions of the atmosphere are standardized on the basis of variations in temperature with height (troposphere through exosphere), there is no common terminology for the regions beyond the atmosphere other than the generic one of outer space. It is possible from a political-legal point of view, as well as scientific, that a future conventional definition of outer space may include portions of the physical atmosphere.

Figure 8 is intended only to demonstrate the vast distances in space. For example, while there are about 57 million square miles of land on earth and there are about 340 million cubic miles of ocean on earth, it has been estimated that there are about 56.5 quadrillion cubic miles in cislunar space.¹⁵ According to some estimates, cislunar space possesses an inner region which is situated from 200 to 26,000 miles above the earth surface. In this area there is relatively little

¹⁴ It is difficult to fix distances precisely within the several atmospheric zones. It has been estimated that within the troposphere there is a maximum height varying from 28,000 feet at the poles to 54,000 feet at the equator. This has been summed up "One can no more define the upper limit of the atmosphere than the outline of a puff of smoke." Loebssack, *Our Atmosphere* 8 (1959).

¹⁵ This is generally considered to be the region below the moon's orbit.

atmospheric drag on unmanned and one-man space vehicles. It is here that the United States has concentrated its greatest space-oriented, scientific, and technological skills and energy. It is in this area that the United States has obtained its largest scientific and technological leads. It is here that the largest number of earth-oriented space vehicles will operate, and it is in this area that "satellites can most effectively support or affect earthbound or seabased operations."¹⁶ In the United States there has been common acceptance of such terms as Solar Space (Interplanetary Space), Galactic Space (Interstellar Space), and Extragalactic Space as descriptive of the physical areas in outer space.¹⁷

The atmospheric gradients in the areas ranging from the surface of the earth to approximately 200 miles in height have at present been the most meaningful to manned flight. It is in this relative area that a reentry corridor will be established for more distant manned flight. Affected in reentry will be such physical problems as the angle of descent, speed or velocity as influenced by drag, temperature, deceleration time, and the overall evenness of the quality of the atmosphere. These and other factors require the establishment of an equilibrium glide pattern at an elevation of approximately 250,000 feet (between 46 and 47 miles). The manned space vehicle will then, preparatory to landing, traverse at this and gradually diminishing heights for perhaps 600 miles according to past experience.¹⁸

Figures 9, 10, and 11 illustrate the perigees, apogees, and inclination characteristics of Sputnik, Vostock, and Cosmos type satellites, respectively.

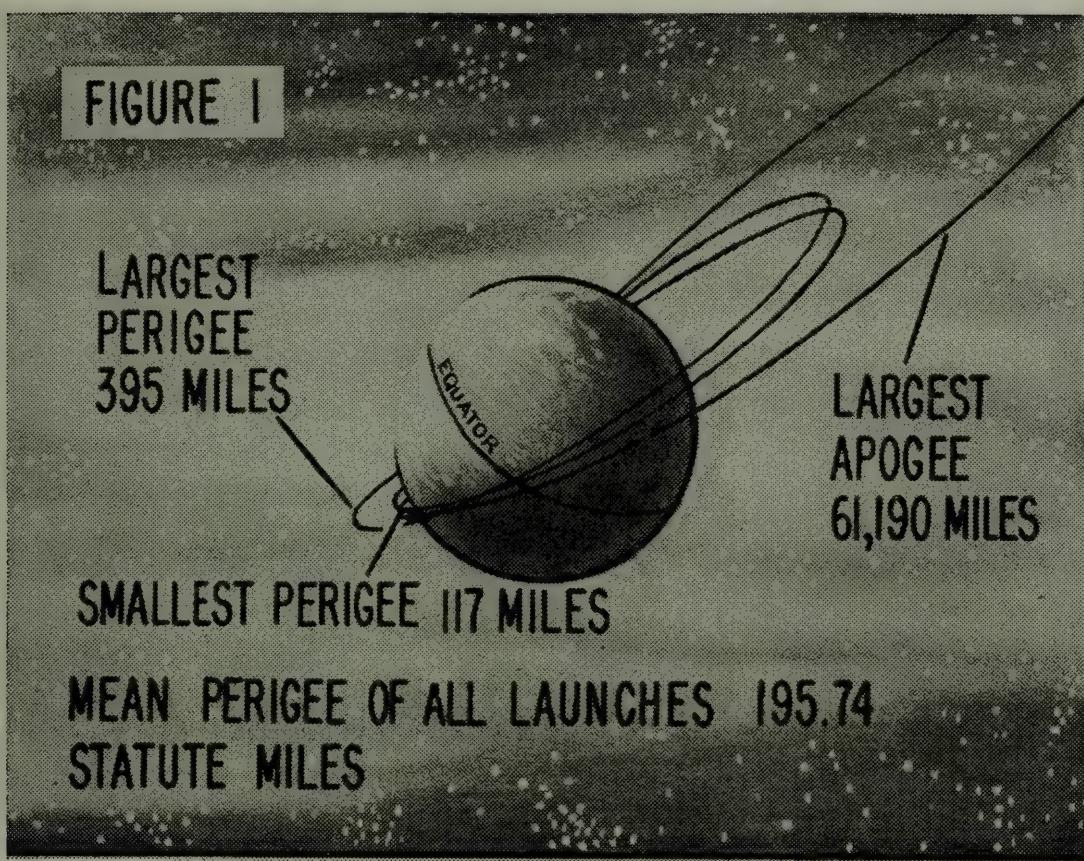
Figure 12 indicates distances in the solar system. Figure 13 also reflects distances in the solar system, and illustrates times to reach the outlying planets at an arbitrary rate of speed of 25,000 miles per hour.

The factual matter depicted in these illustrations is put forward to illustrate the actual proximity of space vehicles and other space devices, including missiles, to the earth's surface. No other conclusion is suggested, and as has been already noted the validity of the presence of such objects is a political-legal matter, rather than one derivable from the nature of the atmosphere. It is interesting to note, however, that one commentator after examining the perigees and apogees of

¹⁶ Cagle, "The Navy's Future Role in Space," 89 *United States Naval Institute Proceedings* 92 (1963).

¹⁷ Hogan, "Legal Terminology for the Upper Regions of the Atmosphere and for the Space Beyond the Atmosphere," 51 *A.J.I.L.* 373-375 (1957); compare "The Space Frontier," 41 *Air Force Magazine* 47-48 (March 1958).

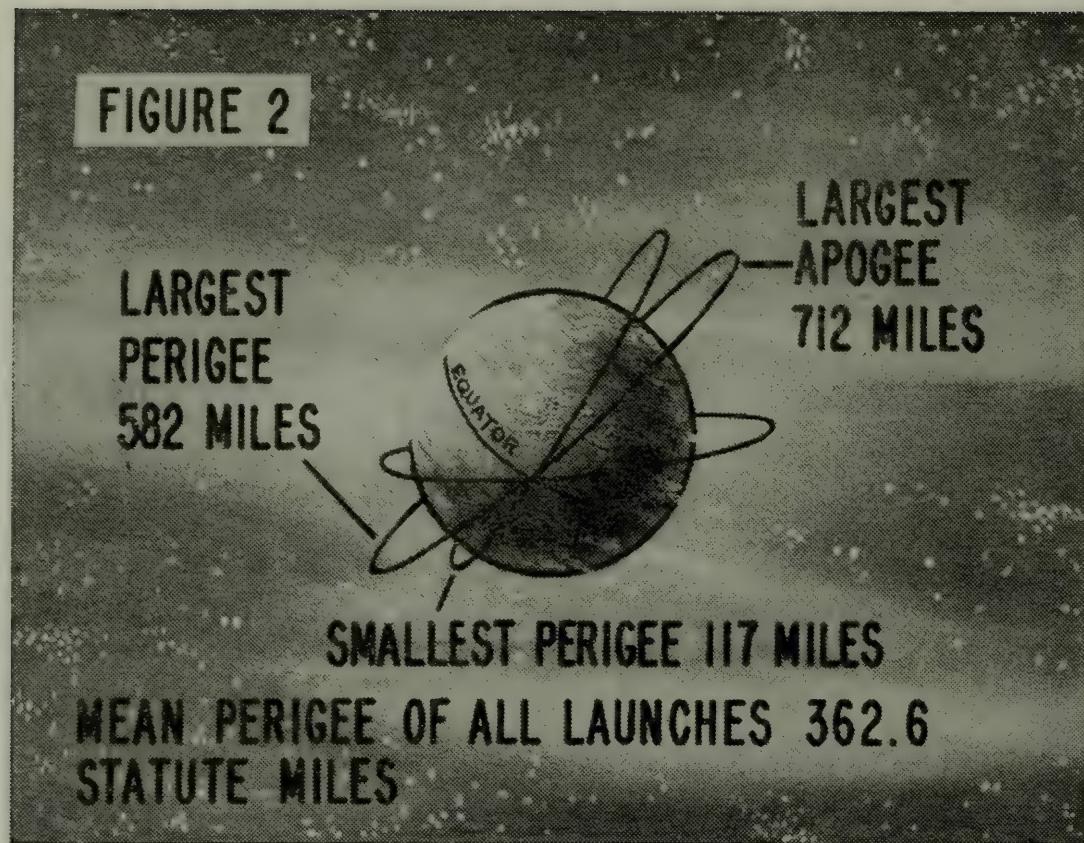
¹⁸ Figure 7.



EXPLORER

	DATE	STATUTE MILES	
		PERIGEE	APOGEE
I	1 FEB 58	224	1,584
3	26 MAR 58	117	1,739
4	26 JUL 58	163	1,372
6	7 AUG 59	157	26,366
7	13 OCT 59	346	676
8	3 NOV 60	252	1,422
9	16 FEB 61	395	1,605
II	27 APR 61	305	1,113
12	15 AUG 61	180	47,800
13	26 AUG 61	175	606
14	2 OCT 62	174	61,190
15	27 OCT 62	194	10,917

Figure 1.

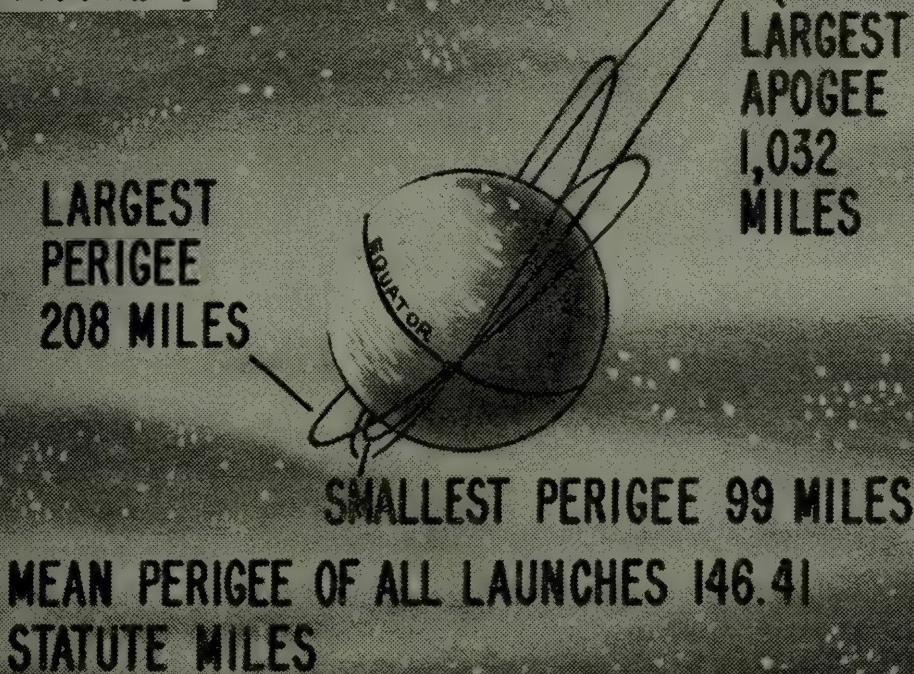


TRANSIT

	DATE	STATUTE MILES	
		PERIGEE	APOGEE
1B	13 APR 60	216	463
2A	22 JUN 60	377	665
3B	21 FEB 61	117	511
4A	29 JUN 61	534	623
4B	15 NOV 61	569	712

Figure 2.

FIGURE 3



DISCOVERER

	DATE	STATUTE MILES	
		PERIGEE	APOGEE
1	28 FEB 59	184	407
2	13 APR 59	152	225
5	13 AUG 59	135	456
6	19 AUG 59	131	528
7	7 NOV 59	99	519
8	20 NOV 59	120	1,032
31	17 SEP 61	152	255
32	13 OCT 61	147	246
34	5 NOV 61	134	637
35	15 NOV 61	147	173
36	12 DEC 61	148	280
38	27 FEB 62	208	308

Figure 3.

LAUNCH PATTERN
PROJECT MERCURY

100
MILES

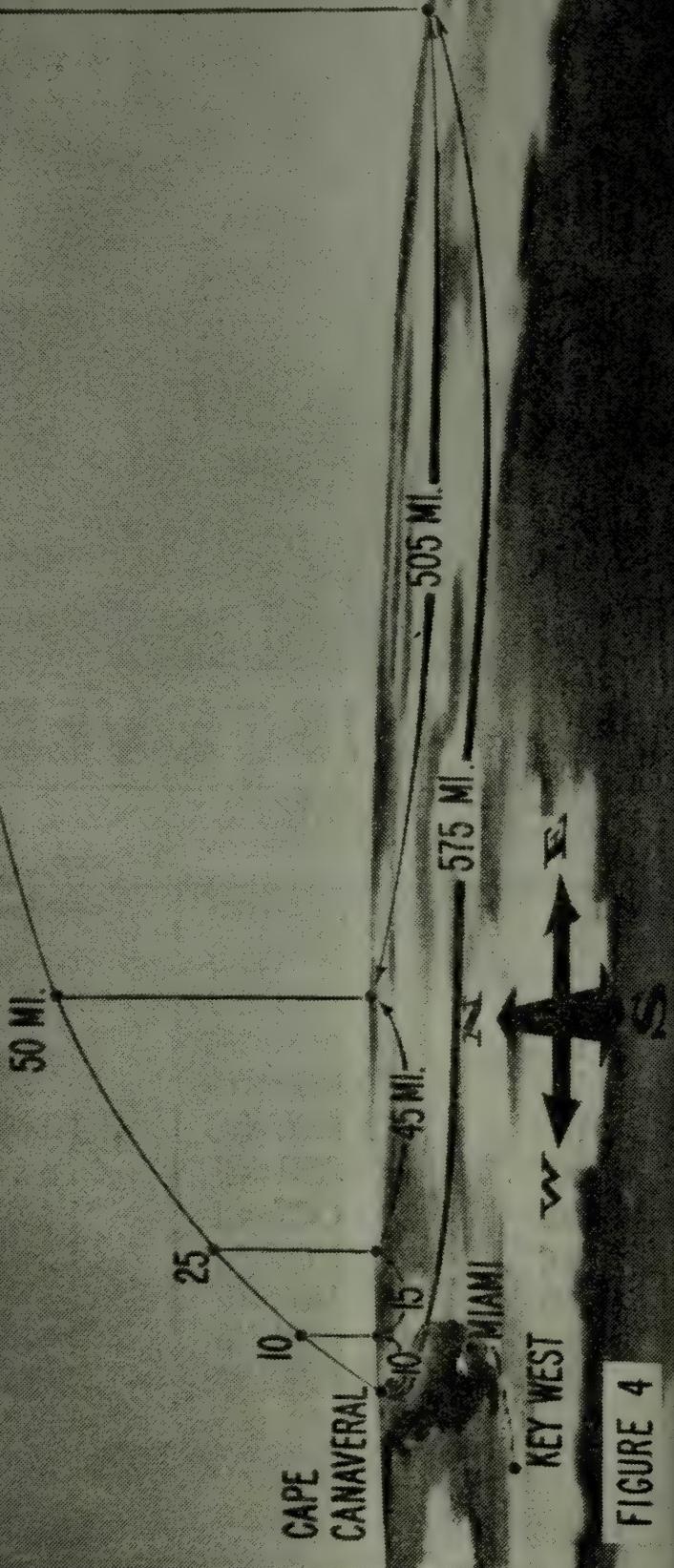
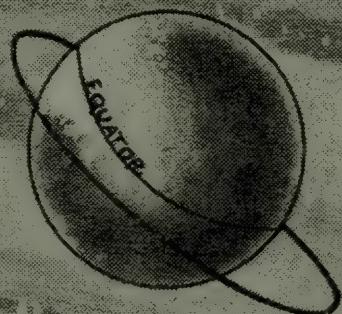


FIGURE 4

FIGURE 5



LARGEST
APOGEE
176 MILES

MEAN PERIGEE OF ALL LAUNCHES 100
STATUTE MILES

MERCURY ATLAS

DATE

STATUTE MILES

PERIGEE

APOGEE

	DATE	PERIGEE	APOGEE
4	13 SEPT 61	100	159
5	29 NOV 61	100	148
6	20 FEB 62	100	163
7	3 OCT 62	100	176

Figure 5.

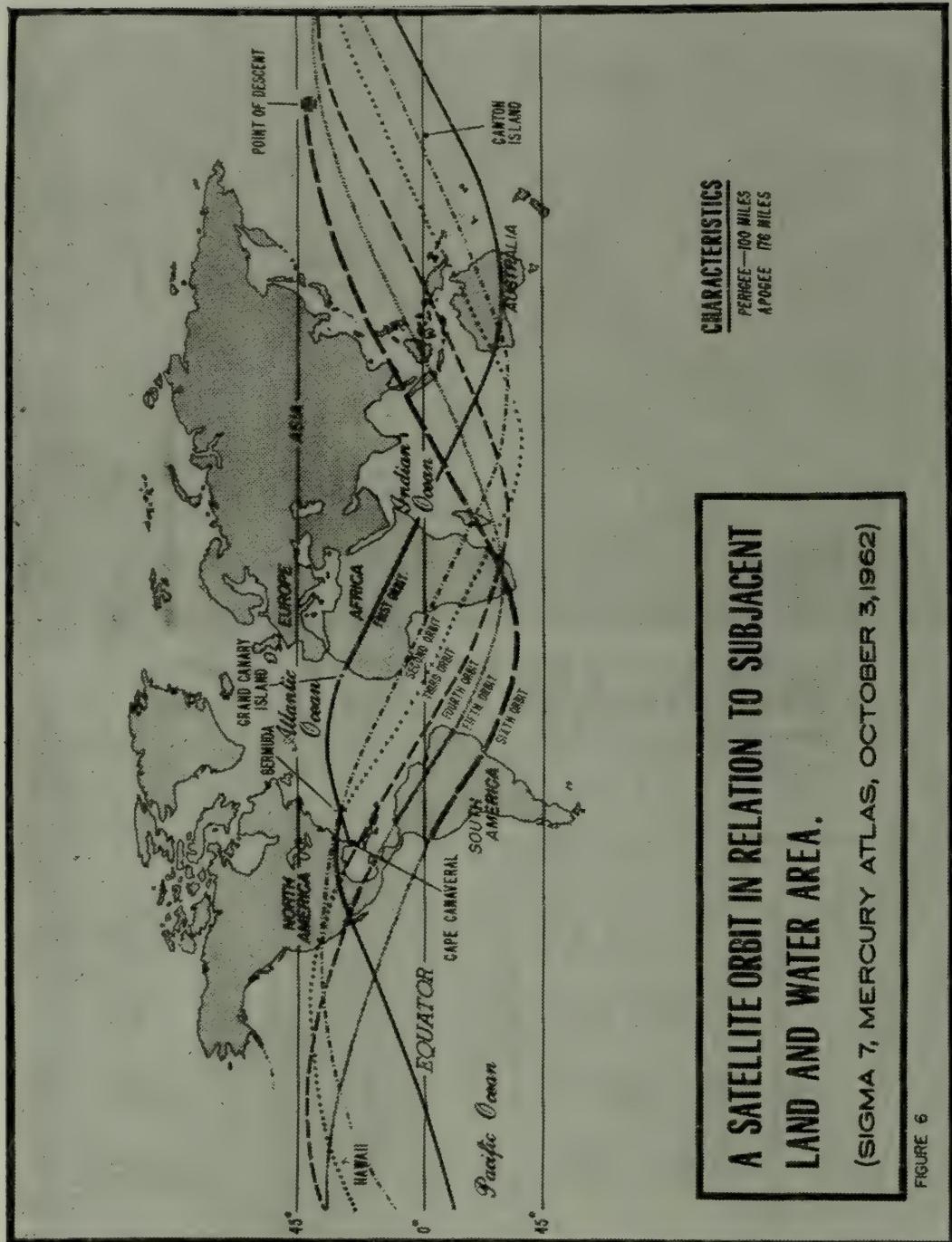


Figure 6.

LANDING PATTERN PROJECT MERCURY

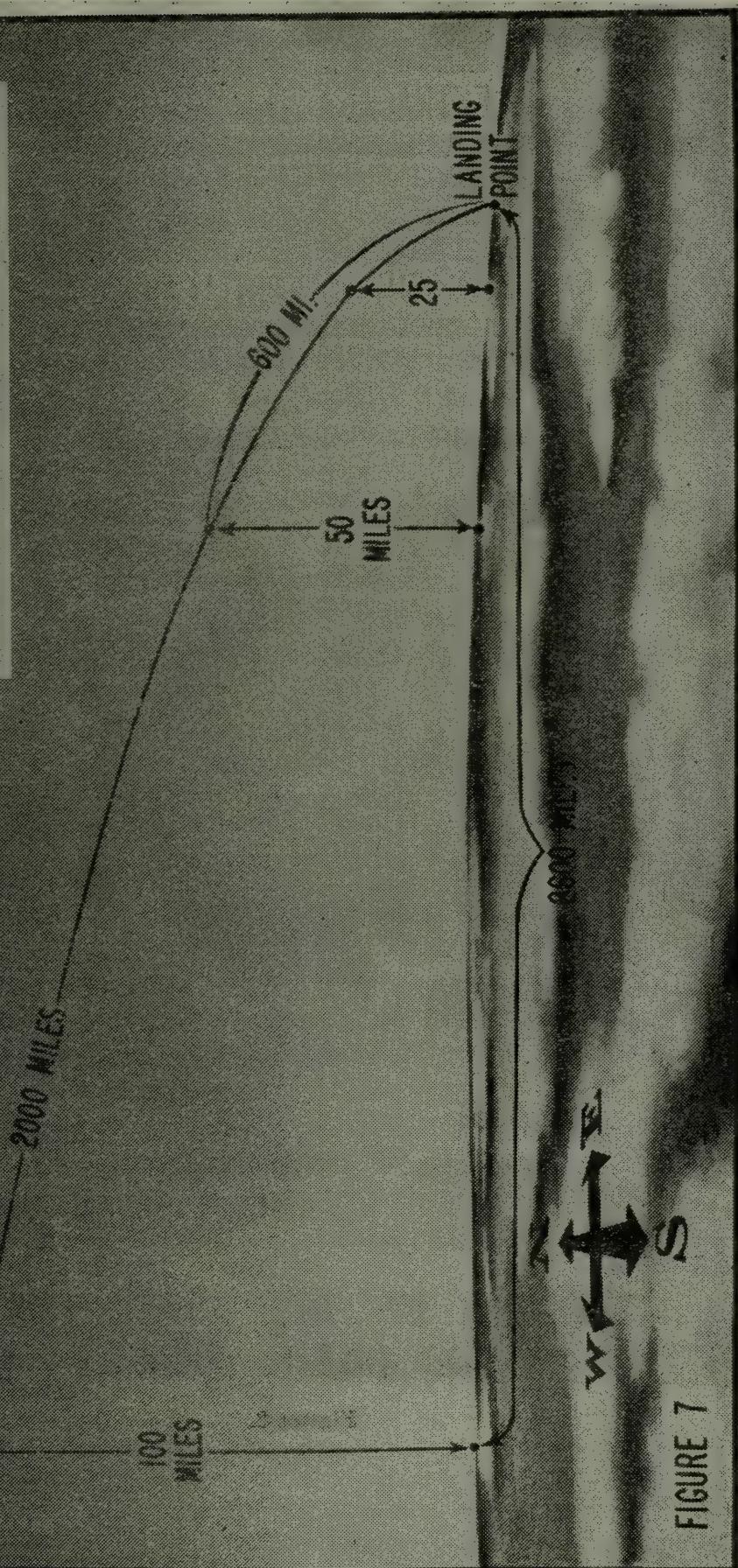


FIGURE 7

Figure 7.

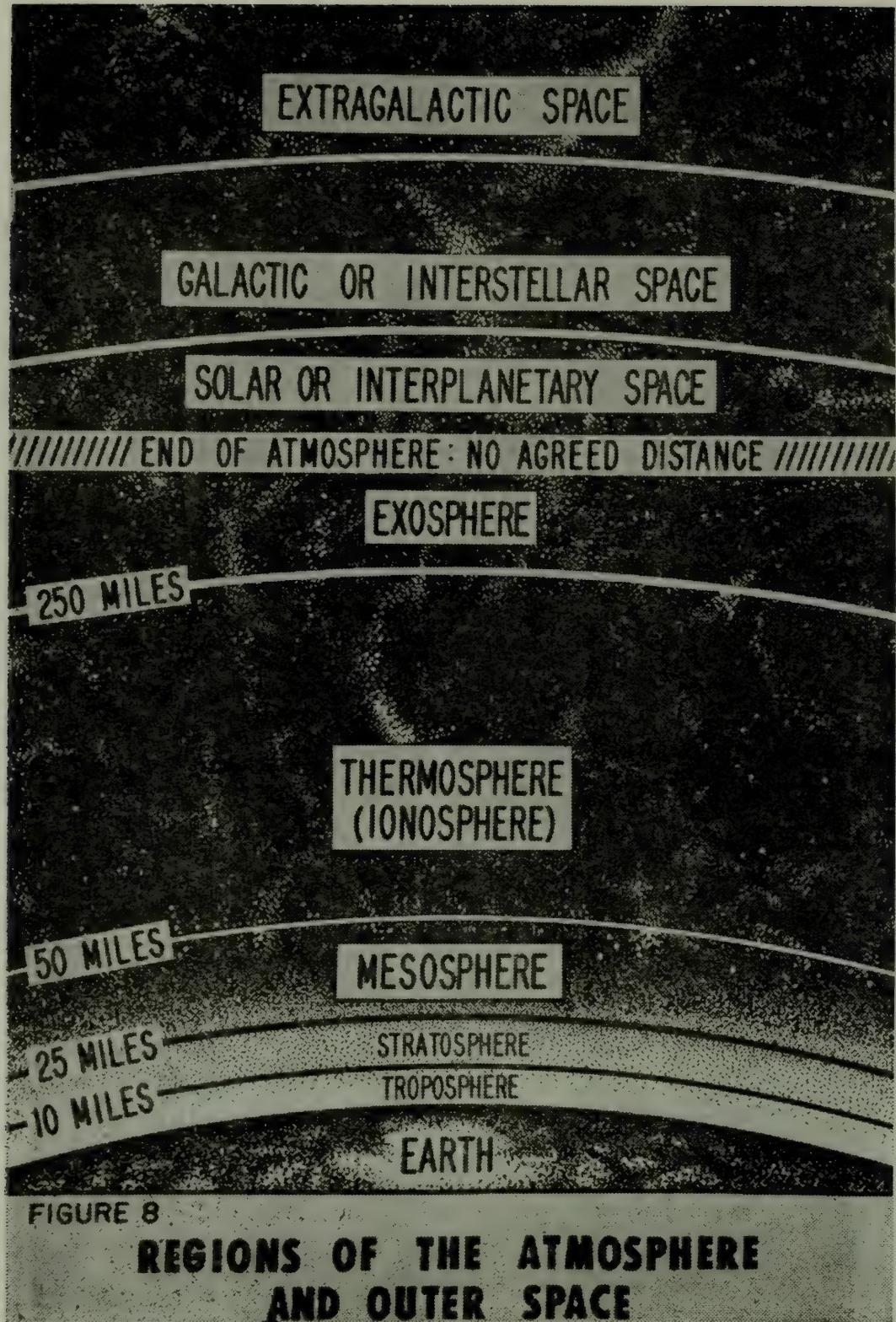
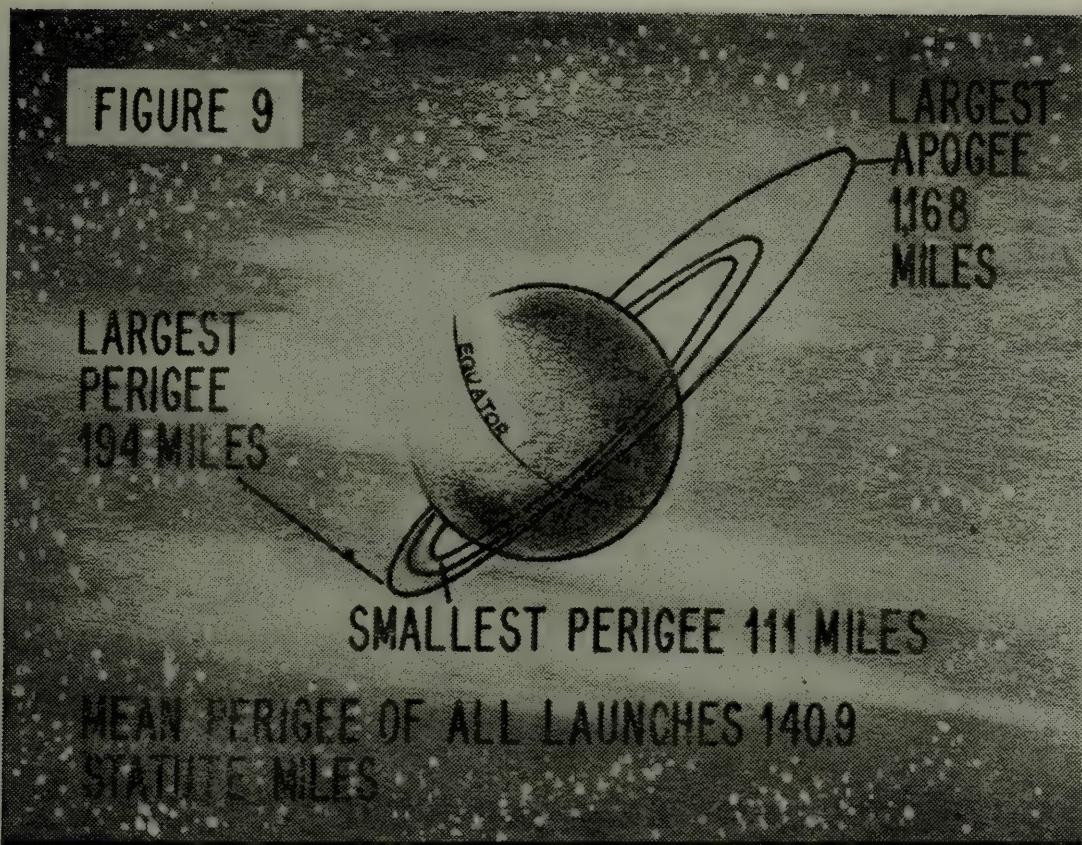


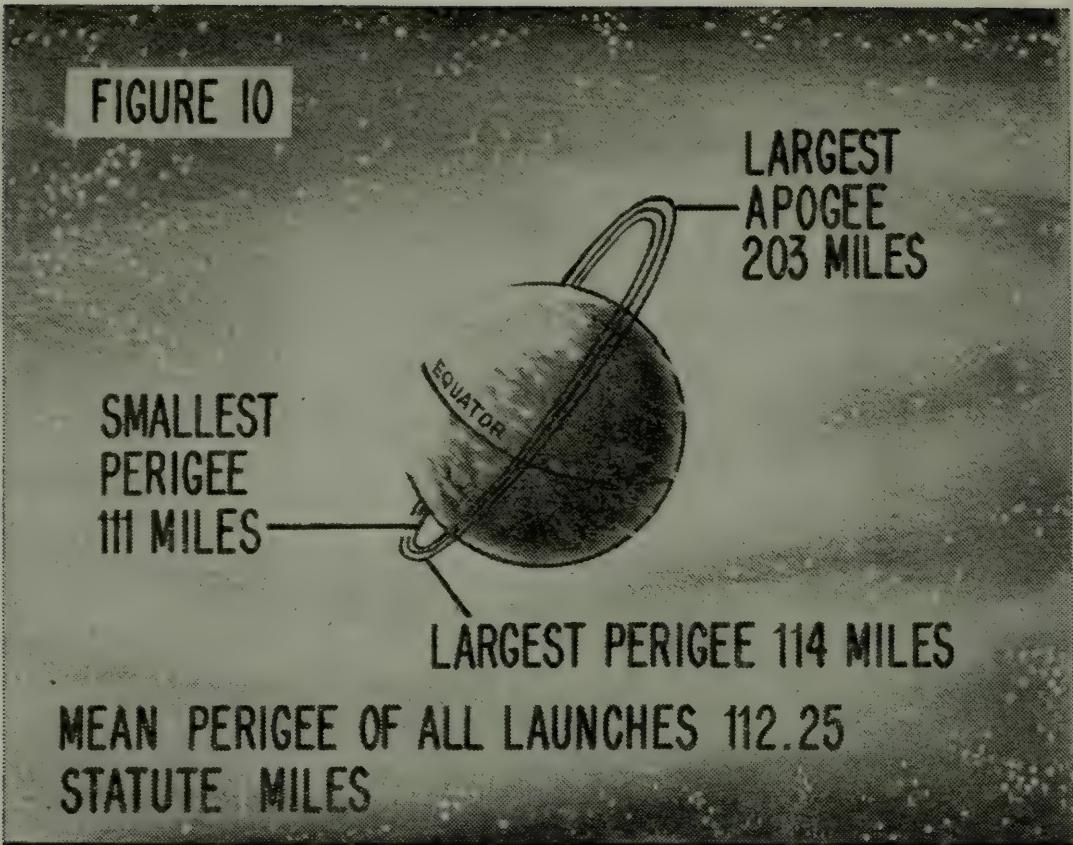
Figure 8.



SPUTNIK

	DATE	STATUTE MILES	
		PERIGEE	APOGEE
1	4 OCT 57	141	588
2	3 NOV 57	140	1,038
3	15 MAY 58	140	1,168
4	15 MAY 60	194	229
5	19 AUG 60	191	191
6	1 DEC 60	116	165
7	4 FEB 61	139	204
8	12 FEB 61	123	198
9	9 MAR 61	114	155
10	25 MAR 61	111	153

Figure 9.



VOSTOK

	DATE	STATUTE MILES	
		PERIGEE	APOGEE
1	12 APRIL 61	112	203
2	6 AUGUST 61	111	160
3	11 AUGUST 62	114	156
4	12 AUGUST 62	112	160

Figure 10.

FIGURE 11



COSMOS

	DATE	STATUTE MILES	
		PERIGEE	APOGEE
1	16 MAR 62	135	609
2	6 APR 62	123	840
3	24 APR 62	131	415
4	26 APR 62	186	206
5	28 MAR 62	118	908
6	30 JUN 62	148	187
7	28 JULY 62	125	218
8	18 AUG 62	152	375
9	27 SEPT 62	187	220
10	17 OCT 62	130	236
11	20 OCT 62	152	572

Figure 11.

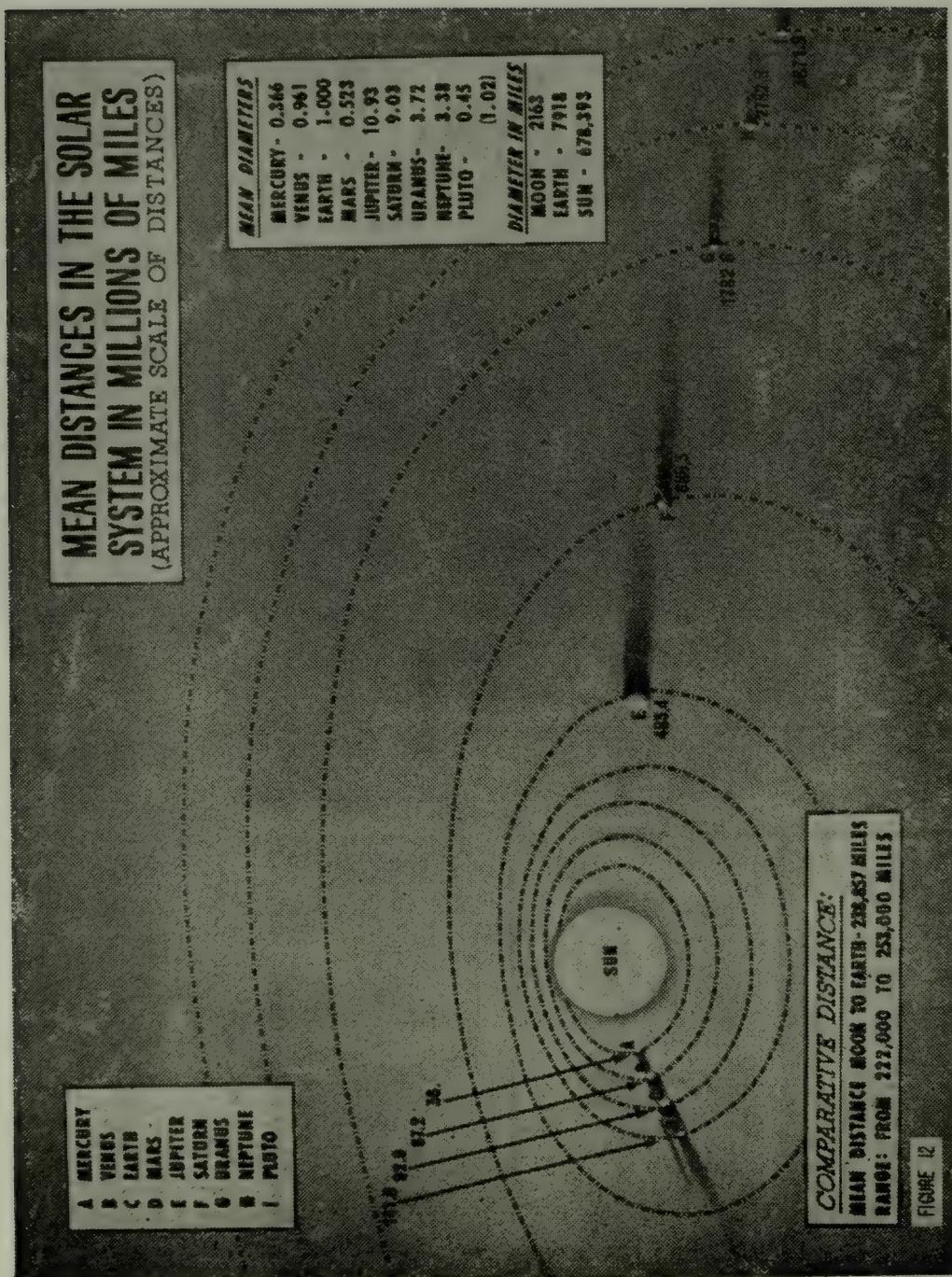


Figure 12.

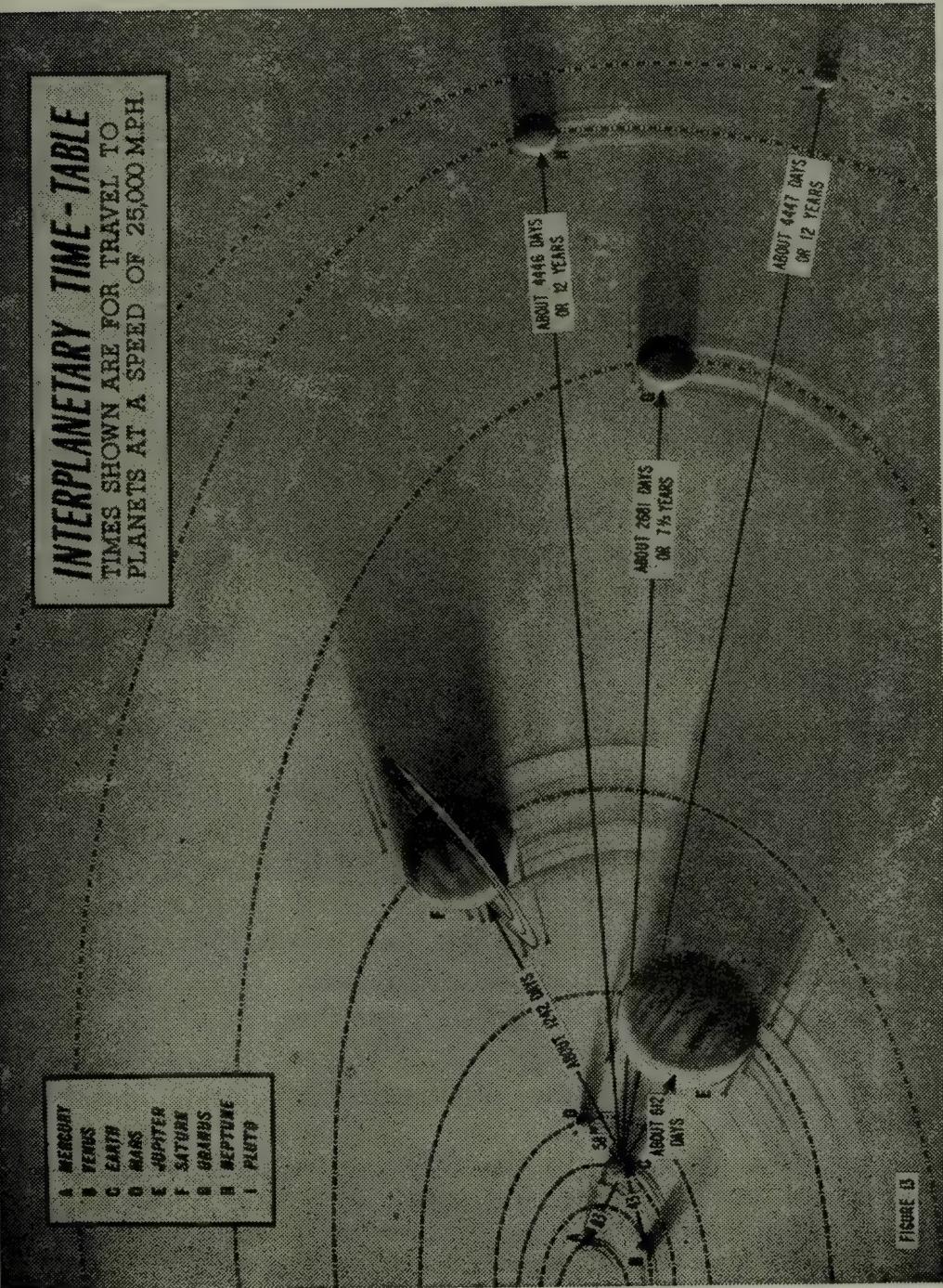


Figure 13.

some launches, also selected by the author, stated "These are all wholly or partly in the Earth's atmosphere and, assuming that the sovereignty of States extends to approximately 300-500 miles, within the national airspace of the countries over which they pass."¹⁹

From the foregoing data, particularly that illustrating the low perigees usually employed by sophisticated satellites, it becomes apparent that there is a need to formalize their right to enter, and the conditions upon which they may enter, airspace superjacent to national areas. This may even result in an express agreement as to the upward limit wherein a state may exercise either sovereignty or non-sovereign controls in superjacent airspace. "One can see from the example of Project Mercury [manned flights] that it would be relatively easy for even a very small country to avoid infringing on the territorial airspace of another state in the launch phase if the upward limit [of sovereignty] were set at 50 miles, while the problem would become much more complicated if it were set at 100 miles."²⁰ The same comment applies to landing procedures, particularly if the spacecraft is designed to return to the land surface of the earth. The situation will be significantly affected by the future existence or non-existence of a rule of law permitting innocent passage of space vehicles through national airspace while undergoing launch or engaging in landing.

3. Orbiting Space Platforms

The fact that a space platform will be capable of orbiting around the earth or other planets qualifies it as a space vehicle. Its major difference from a typical satellite will be its function as a large instrument platform. Presumably it will possess the same general characteristics as less complicated satellites, and would appear to be subject to the same political-legal rights and duties.

A recent description of this craft suggests that it will take various forms and will be launched frequently. "The power supply and the telemetry system are common to all experiments abroad. The design

¹⁹ Cheng, "Problems of Space Law," in *Legal Problems of Space Exploration* 667 (1961). There is, at the present time, absolutely no basis upon which such an assumption can be supported, and Cheng notes, p. 668, that the area of national airspace has not been defined nor its limits agreed upon.

²⁰ Johnson, "Remarks," 1961 *American Society of International Law Proceedings* 168 (1961). He carefully notes that the right to engage in peaceful uses is unaffected by the absence of a rule fixing the limits to sovereignty, and that the latter is no guide to the right of a State to exercise "legitimate self-defensive measures in outer space. The extent of territorial sovereignty is not the criterion for such matters." *Ibid.*, 167.

permits the carrying of a number of independent experiments and the ready change of experiments between different launchings. The observatories now scheduled include the orbiting solar observatory, the orbiting astronomical observatory, and the orbiting geophysical observatory in either an eccentric or a polar orbit.”²¹

4. Bidimensional Devices

The X-15, like other space vehicles and guided missiles, is susceptible to areas containing both maximum and minimum amounts of atmospheric content. Although it is frequently referred to as a hypersonic rocket aircraft, it is probably more proper technically to describe it as a rocket vehicle, or spacecraft. While it functions equally well “in or outside the air * * * the maneuvering must depend on apposite propulsion and guidance principles.”²² This conclusion is based on the X-15’s dependence for its own propulsion capacity on rocket power and the fact that it does not employ air breathing devices. As a rocket craft it may be catapulted into an orbit above the atmosphere’s aerodynamic limits where its movement will depend upon a previously determined trajectory. In the future it will use its own propulsion to leave the earth’s surface and to move freely in the atmosphere and in outer space. Its configuration permits it to use the air for guidance when situated in the atmosphere.

The achievements of the X-15 have been impressive. By 1963 one had reached an altitude of 351,000 feet (over 66 miles), another had achieved a speed of 4,159 miles per hour, and more than a few had consistently demonstrated the ability to operate in an area above 99.9 per cent of the earth’s atmosphere. During 1963 it has been estimated that the X-15 would climb to 80 miles. At this height it would be but 20 miles below the usual perigee height of manned space vehicles. At maximum speeds such devices have arrived at near-orbital velocities and could be placed in orbit. They have demonstrated a capacity to

²¹ Porter, “The Space Program of the USA, A Summary,” 11 *COSPAR Information Bulletin* 91 (1962). For a non-technical description of the six parameters used to describe the orbit of an artificial satellite see Walker, “The U.S. Navy Navigational Satellite System,” 5 *Navy* 35 (1962); *Space Handbook: Astronautics and Its Applications*, 85th Cong., 2d Sess., Washington, 127–130 (1959).

²² Haley, “Survey of Legal Opinion on Extraterrestrial Jurisdiction,” *Legal Problems of Space Exploration* 720 (1961). The X-20, Dyna-Soar Project, (which has been cancelled) was to use both centrifugal force and aerodynamic lift. In space its attitudes were to be controlled by reaction jets mounted on the glider. The use of retro-rockets would have permitted it to complete its orbit and return to the heavier atmosphere.

reenter heavier atmosphere from near-orbital velocities, to maneuver in the atmosphere, and to engage in conventional landings.

The legal-political problems affecting the X-15 type of rocket vehicle are similar to those for space vehicles and guided missiles. It should be regarded as a manned, maneuverable, and recoverable rocket vehicle.

5. Multidimensional Devices

Inner space as well as land surfaces, ocean surfaces, airspace, and outer space, may soon come to be frequently employed by space vehicles. The ocean surfaces are already used for range support and recovery of space vehicles and their occupants. The subsurface areas of the oceans have demonstrated great promise as a launching medium for satellites and other space vehicles. Their utility as a suitable environment for the Polaris type guided missile is well known.

Numerous physical factors limit the launching of space vehicles from land surfaces, and launch problems are enhanced by the need to develop larger and heavier launching equipment. The resultant noise, difficulty of transportation over land to a launching site, dangers of explosion at the launching pad, problems involved in destroying a vehicle which has gotten off course, attendant damage and liability problems, and all of the problems connected with radiation and other contamination resulting from nuclear energy argue for sea launches. The Navy's Hydra project envisions successful sea launches of heavy devices.²³ The probability of extended multidimensional employment of space vehicles demonstrates the need for a close interrelationship between the law of the sea and the law of outer space.

The foregoing empirical data also supports the view that conventional distances—for example, as measured on the high seas, or on land—with attendant security implications, no longer are very meaningful for space activities. It is well known that spacecraft are capable of reaching and maintaining very precise orbital paths and that missiles and rockets can be very accurate when directed from one surface point to another. It may safely be assumed that increasing exactness will be a principal characteristic of all space devices.²⁴ Observation and tracking capabilities will also become more efficient.²⁵ As space vehicles of all types become more sophisticated,

²³ Homer, "Launching Pads Go to Sea," 5 *Navy* 32-3 (1962); compare Cagle, *supra*, note 16, at 92.

²⁴ *Manned Space Flight Program of the National Aeronautics and Space Administration: Projects Mercury, Gemini, and Apollo*, 87th Cong. 2d Sess., Washington, 1962.

²⁵ *Space Handbook; Astronautics and Its Applications*, *supra*, note 21, 77-84.

and as their physical characteristics and capabilities are more generally understood, their significant impact upon the social complex will achieve ever-increasing recognition. In these circumstances there is a need for avoiding the appearance of a legal vacuum in outer space.

B. USERS OF SPACE VEHICLES

Space vehicles have not only been used in a great variety of ways. They have also been precisely designed so that they take many forms in the course of serving a substantial number of special functions. Further, they have been put to use by at least three types of clientele, namely, public users, private users, and mixed public-private users. The present section will demonstrate the particular interests of these three types of users.

1. Public Users

The public user of space vehicles has been the nation-state and international organizations, composed of nation-states, particularly created to engage in space activities. Use by the nation-state will be discussed first.

a. *Nation-States*

Although the age of space is frequently said to date from October 4, 1957, as a result of the successful launching of Sputnik I on that occasion, there were many important, if less spectacular, space accomplishments well prior to that time. The V-1 and V-2 rocket in Germany, the V-2 in the United States, the Bumper type research rocket, the Aerobee family of research rockets, and the Viking research rocket—with the German devices being used prior to 1942—illustrate successful accomplishments at altitudes ranging roughly from sixty to two hundred miles.²⁶ All launched substantial payloads prior to October, 1957, and in many instances scientific data of vast importance was acquired. The devices were intended to implement national space programs.

Pursuant to the provisions of Part B, paragraphs 1 and 2 of the United Nations General Assembly resolution 1721 (XVI), the United States since March 5, 1962, and the Soviet Union since March 24, 1962, have registered the fact of space vehicles launched into sustained orbit or beyond. The initial American report of March 5, 1962, recorded launches dating from February 1, 1958.²⁷ The initial Soviet report of March 24, 1962, recorded launches dating from October 4,

²⁶ *A Chronology of Missile and Astronautic Events*, 87th Cong., 1st Sess., Washington, 155-159 (1961).

²⁷ U.N. Doc. A/AC.105/INF.1.

1957.²⁸ These two nations continue to submit such reports periodically to the United Nations. In addition to American and Soviet launches, the United Kingdom in conjunction with the National Aeronautics and Space Administration launched the 132 pound Ariel (1962 Omicron 1) on April 26, 1962. According to the American report to the United Nations, the Ariel was a United Kingdom satellite launched by a United States launch vehicle.²⁹ With a perigee of 242/247 statute miles, an apogee of 754/643 statute miles, and an inclination of 53.9/53.8 degrees, it was in active orbit at the time of this writing.

Further, the government of Canada in conjunction with the United States launched the 320 pound Alouette (1962 Beta Alpha 1) on September 28, 1962. According to the American report to the United Nations, the Alouette was a Canadian satellite launched by a United States launch vehicle.³⁰ With a perigee of 620/623 statute miles, an apogee of 638/641 statute miles, and an inclination of 80.5 degrees, it was in active orbit at the time of this writing. At the close of 1962, the United States reported the presence in orbit or beyond of 119 space vehicles (including the British and Canadian satellites).³¹ On December 28, 1962, the Soviet Union submitted a report to the United Nations concerning launchings of artificial earth satellites and space objects. Pursuant to the numbering system employed by the Soviet Union, which does not purport to be a complete report of launchings, on November 1, 1962, the Soviet's Serial 29 was announced. This was a space rocket carrying the "Mars 1" automatic station to the neighborhood of the planet Mars.³² Although many nations have plans for space programs, no national launchings, other than those referred to above, have been registered with the United Nations.

²⁸ U.N. Doc. A/AC.105/INF.2.

²⁹ U.N. Doc. A/AC.105/INF.7.

³⁰ U.N. Doc. A/AC.105/INF.20, NASA News Release No. 62-189, September 22, 1962.

³¹ U.N. Doc. A/AC.105/INF.28. As of midsummer, 1964, there were 100 United States, one Canadian, and 16 Soviet spacecraft in orbit. 4 SPT Space Log 40 (Summer, 1964).

³² U.N. Doc. A/AC.105/INF.24. According to 2 SPT Space Log 7 (1962) there were eight Soviet spacecraft in orbit as of November 21, 1962. On February 1, 1963, there was doubt whether the Soviets had launched four space shots between September 1, 1962 and January 5, 1963. If launched, as was probable, no official announcement had been made by February 1, 1963. *Christian Science Monitor*, February 1, 1963. On June 6, 1963, Ambassador Stevenson called attention to six unreported launches by the Soviets during the period August 25, 1962 and January 4, 1963. *United States Mission to the United Nations*, (Press Release No. 4219, 2) (June 6, 1963).

In addition to the national launches referred to above there has been a developing interest in the use of space vehicles and ballistic missiles by over forty other countries. Operational activities have been carried on separately and in cooperation with one or more additional States.

During 1962, and subsequently, the United Kingdom, France, Germany, Belgium, Italy, and India individually engaged in rocket launchings or made extensive plans to do so. Interesting space programs were also being carried forward in Argentina, Australia, Canada, Czechoslovakia, Israel, Japan, the Netherlands, Pakistan, Peru, Poland, Union of South Africa.³³ Britain has entered into an agreement with Australia to make use of the Woomera rocket range, and France has agreed with Algeria to employ a Sahara test range at Colomb-Bechor until 1967.³⁴

Further, joint national efforts involving rocket launchings and a space research center have been undertaken by Norway, Sweden, and Denmark. A joint research center has been established at Rao, Sweden, and rocket launchings have taken place in both Norway and Sweden. During the summer of 1962 two sixty-eight mile launches were successfully made at Nidsel, Sweden. These were accomplished as a result of cooperation between the United States and Sweden, and the Nike-Cajun two-stage rocket was employed.

Also, during the summer of 1962, a joint Norwegian-Danish program was carried on at the Lofoten Islands of Norway, above the Arctic Circle. Two one-hundred mile probes were made using the Nike-Cajun two-stage rocket.³⁵

Cooperative activities have been carried on between nations in such fields as tracking of space vehicles and missiles. Thus, the United States has arranged with sixteen nations for the operation of four separate tracking networks. The first American tracking program was created in order to monitor the presence of Explorer I, launched on January 31, 1958. Countries assisting the United States in 1963 in these efforts include The Argentine Republic, Australia, the United States of Brazil, Canada, The Republic of Chile, The Republic of Ecuador, The United Kingdom, India, Iran, Japan, The United

³³ Orlen, "Space Programs of Other Nations," Odishaw, ed., *The Challenges of Space* 204-232 (1962). India has initiated an equatorial Sounding Rocket Facility, U.N. Doc. A/AC.105/8. Detailed reports of national activities are contained in U.N. Doc. A/AC.105/7, and Add. 1, 2, 3.

³⁴ The French have successfully tested the Topaze rocket which will serve as the second stage of the satellite launcher Diamant. It is their plan to launch a 150 pound satellite in 1965.

³⁵ *Christian Science Monitor*, January 5, 1963.

Mexican States, The Netherlands, The Federation of Nigeria, The Republic of Peru, The Republic of South Africa, and Spain.³⁶

Three additional cooperative programs of importance have been entered into between the United States and other countries. Thus, on November 5, 1962, the United States and Japan agreed to use experimental communication satellites for relaying radio signals. Cooperation between the two nations was intended to make use of the facilities of the United States Communications Satellite Corporation. The latter was created by Act of Congress on August 31, 1962.³⁷

An agreement of great interest was entered into between the United States and the Soviet Union in 1962, and announced at the United Nations on December 5, 1962. It established a bilateral cooperative program for the peaceful, scientific exploration of outer space in three fields, namely, meteorology, a world geomagnetic survey, and a passive communications satellite (Echo II).³⁸

On February 18, 1963, the United States and France entered into an agreement whereby a cooperative program to investigate the propagation of Very Low Frequency electromagnetic waves was established. The agreement looked toward the launching of sounding rockets initially into regions 50 to 63 statute miles above the earth. Later it was planned to launch a scientific satellite into earth orbit in the region above 63 statute miles. During the first phase of the effort American sounding rockets would carry French instrumented payloads. During the second phase a French satellite would be employed and would be launched by an American vehicle.³⁹

The foregoing international agreements, as well as comparable future ones, and the agreements entered into prior to and during the International Geophysical Year (IGY), 1957-1958,⁴⁰ suggest a strong national commitment to important space activities. They also offer evidence of limited international cooperative efforts in space.

b. International Entities

A multitude of proposals have been put forward concerning the role of international bodies in outer space. The function of one such

³⁶ *NASA News Release No. 63-10*, January 27, 1963.

³⁷ 76 Stat. 421.

³⁸ U.N. Doc. A/C.1/880; *NASA News Release No. 62-257*, December 5, 1962. See pp. 91-95, 275-276 *infra* for an analysis of this agreement. Annex 22, *infra*, pp. 482-488.

³⁹ *NASA News Release No. 63-49*, March 11, 1963.

⁴⁰ See pp. 127-187 *infra* for the role of the IGY in developing the international law of outer space.

group of institutions would be to manage the political-legal future of space. The function of another proposed international body would be to operate cooperative space programs and launching facilities.

There now is no doubt that the United Nations will be the principal public international institution engaged in the management and development of political and legal principles for outer space.⁴¹ Other institutions, particularly the specialized agencies of the United Nations, have a direct interest in certain areas of space law. This was recognized in General Assembly Resolution 1721 (XVI) of 1961. Part C of that resolution requested a report from the World Meteorological Organization on weather and atmospheric matters affecting space. Part D of that resolution requested a report from the International Telecommunication Union on communications matters, particularly radio frequency allocations, affecting space. The Assembly Resolution specifically referred to the role of UNESCO in space matters, and also acknowledged the space interests of other specialized agencies as well as governmental and nongovernmental organizations. The principal role of the nongovernmental Committee on Space Research (COSPAR) of the International Council of Scientific Unions (ICSU) was acknowledged in the United Nations Resolution. COSPAR evolved from the organizational entities which had been interested in space research during the IGY. The International Civil Aviation Organization (ICAO) is concerned with the development of space law inasmuch as space vehicles during launch and landing traverse that portion of the atmosphere dealt with in the 1944 Chicago Convention. Schwartz has listed nine areas in which ICAO has an interest in space, including identification, investigation of accidents, assignment of radio frequencies, search and rescue, and liability.⁴² The International Atomic Energy Agency (IAEA) also has an interest in space operations and law.

Two recently created international organizations possess important interests in the practical management of space activities. A Convention providing for the establishment of a European Organization

⁴¹ Other proposals may be seen in *The Colloquia on the Law of Outer Space*, in articles collected in *Legal Problems of Space Exploration* (1961) and in *Space Law, A Symposium* (1959). Compare, Mankiewicz, "The Regulation of Activities in Extra-Aeronautical Space, and Some Related Problems," 8 *McGill Law Journal* 199-207 (1962). The United Nations in 1962 decided to sponsor international sounding rocket facilities on the geomagnetic equator in time for the International Year of the Quiet Sun (IYQS). U.N. Doc. A/RES/1802 (XVII) 3, Annex 3, *infra*, pp. 446-450.

⁴² Schwartz, *International Organizations and Space Cooperation* 93-94 (1962). Compare, Schwartz, "International Space Organizations," in Odishaw, ed., *The Challenges of Space* 241-266 (1962).

for the Development and Construction of Space Vehicle Launchers (ELDO) was signed in London in March and April, 1962.⁴³ An Agreement creating a European Space Research Organization (ESRO) was signed in Paris on June 14, 1962.⁴⁴

ELDO contemplates thirteen active members, namely, Australia, Austria, Belgium, Denmark, France, Federal Republic of Germany, Italy, Netherlands, Norway, Spain, Sweden, Switzerland, and the United Kingdom. However, only the representatives of Australia, Belgium, France, Germany, Italy, the Netherlands, and the United Kingdom signed the Convention and the Protocol.

The goals of ELDO include the development and construction of space vehicle launchers and their equipment suitable for practical applications and for supply to eventual users. ELDO was charged with the peaceful use of its launchers and equipment, and is bound to supply participating members with know-how and practical applications.⁴⁵ The Convention authorizes the Organization to use national facilities, but it may also establish additional facilities, if required.⁴⁶

The participating States agreed that ELDO's initial program was to consist in "the design, development, and construction of a space vehicle launcher using as its first stage the rocket 'Blue Streak' and with a French rocket as its second stage."⁴⁷ The program envisioned the design and development of other parts for the system and of a series of satellite test vehicles. Firings were to be conducted at Woomera, Australia, during the developmental period, and during second and third stages of development such firings are to be carried out wherever economic and technical conditions are most favorable.⁴⁸

At this writing ELDO is still in the organizational stage. Its original budget was fixed in the neighborhood of two hundred million dollars. It is a highly specialized regional organization of States, and takes into account the large costs involved in national space programs. It is a technical body having defense implications, and its success will be measured by its ability to develop and construct large satellite launchers. When it becomes operational, it will be the first large multimembered international space organization engaging in

⁴³ *Miscellaneous No. 17 (1962). Cmnd. 1731.* A Protocol establishing a Preparatory Group to set up the Organization was signed on May 9, 1962. *Treaty Series No. 68 (1962), Cmnd. 1895.*

⁴⁴ *Miscellaneous No. 30 (1962), Cmnd. 1840.*

⁴⁵ ELDO Convention, Article 2.

⁴⁶ *Ibid.*, Article 5.

⁴⁷ *Ibid.*, Article 16.

⁴⁸ *Ibid.*

the same kind of activities now common to the United States and the Soviet Union.

ESRO's members will include all members of ELDÖ, except Australia. The goals of ESRO include the carrying out of scientific research and related technological activities for sounding rockets, satellites, and space probes. The organization will obtain launching vehicles and arrange for their launching, and will engage in such administrative detail as is required to accomplish these purposes. Pursuant to Article VI of ESRO's Final Act, the organization will establish and operate the facilities required for its program. Launchings are intended to support scientifically valuable experiments, which will be the product of national and ESRO planning. The legal status of the organization is provided for in Article XIV of the Final Act, which states that "The Organization shall have legal personality."

In order to achieve its scientific and technological goals, the members decided to establish a European Space Technology Center in Delft, Holland; a Data Center in Darmstadt, Germany; a northern range for the launching of sounding rockets at Kiruna, Sweden, and an official laboratory in Italy. Its specific objectives between 1962 and 1970 include:

(a) the firing, at a rate building up to a steady level of the equivalent of about 65 medium sized vehicles per year by the third year of its existence, of a variety of types of fully-instrumented vertical sounding rockets containing mainly nationally financed experiments;

(b) the successful launching, annually, from the fourth year of its existence, of two fully-instrumented small satellites in near-earth orbits (*i.e.*, carrying payloads up to about 200 kilogrammes) again containing mainly nationally financed experiments;

(c) the successful launching, from the sixth year of its existence, of two fully-instrumented space probes or major satellites (*i.e.*, requiring large launching vehicles).⁴⁹

ESRO has plans for putting 10 sounding rockets into space during 1963. It hopes to launch 40 during 1964, and as many as 65 each year during succeeding years. The small satellites programmed under

⁴⁹ Final Act of the Conference, *supra*, note 44. Protocol Concerning the Financing of the European Space Research Organization During Its First Eight Years of Existence, 20.

part (b) above will weigh between 1,100 and 2,200 pounds. Lighter payloads will be sent to the moon.⁵⁰

The Organization plans to spend in the neighborhood of \$300,000,000 during the 1962-1970 period. It will not build space vehicles, but will obtain them from ELDO, with whom it is expected there will be close cooperation. There is also a possibility that it will obtain space vehicles from the United States. A hope has been expressed that ELDO, ESRO, and NASA will not engage in duplicatory activities. Director James E. Webb of NASA has stated "NASA has officially indicated to both the new organizations its readiness to enter into cooperative programs on the same basis as in our bilateral arrangements."⁵¹

Through such arrangements as these, as well as through activities and efforts at the United Nations, scientific and technological know-how will be extended continually to additional nation-states and to many types of international organizations.⁵² The practical result will be to enlarge the number of effective participants in space activities, increase the number of space vehicles and other devices in space, enhance problems in all of earth's dimensions, and require the application of legal principles and rules to these various uses.

2. Private Users

a. Corporations

The launching of the private, commercial, communications satellite, Telstar I, on July 10, 1962, marked the first large-scale use of outer space for nonpublic purposes. It was the first spacecraft built and financed by U.S. private enterprise. It was constructed by the

⁵⁰ *New York Times*, November 14, 1962.

⁵¹ *Christian Science Monitor*, February 1, 1963; Schwartz, *supra* note 42 at 95-99.

⁵² Compare C. Wright, "The United Nations and Outer Space," in Odishaw, ed., *The Challenges of Space* 284: "The prevalent view among governments is that the United Nations needs to take cognizance of the role and activities of nongovernmental bodies organized by the international scientific community." In addition to ICSU and COSPAR, these include International Year of the Quiet Sun (IQU), World Magnetic Survey (WMS), and International Astronautical Federation (IAF). ICSU is composed of international unions representing astronomy, biochemistry, biological sciences, crystallography, geography, history and philosophy of science, mathematics, theoretical and applied mechanics, pure and applied physics, pure and applied chemistry, physiological sciences, scientific radio, and geodesy and geophysics. In 1960 eighteen national scientific institutions were represented in COSPAR, with the National Academy of Sciences representing the U.S. and the Academy of Sciences representing the Soviet Union. 2 *CONSPAR Information Bulletin* 1-2 (1960).

Bell Telephone Laboratories, and is owned by the American Telephone and Telegraph Company.⁵³ It circles the earth every two hours and 38 minutes, with a perigee of 593/588 statute miles and an apogee of 3503/3508 statute miles. It is in active orbit at an inclination of 44.8 degrees. It was launched for the Company by NASA, which was compensated for this service. A Delta type launch vehicle was employed.

Telstar has been referred to as a communications superhighway through space. Its record of "firsts" include the first "telephone call via an active communications satellite; the first taped TV pictures to go across the Atlantic via satellite; the first live TV program seen simultaneously in Europe and the United States; the first facsimile photograph transmitted via satellite across the Atlantic; the first facsimile newspaper so transmitted."⁵⁴ With the use of Telstar it becomes possible to make a direct dial telephone call to any part of the world, to establish closed circuit TV links on an international basis, and to transmit electronic data and to receive, transmit, and amplify ground messages from great distances. In order to accomplish these tremendous feats, communications stations located on the ground in France, Italy, and the United Kingdom cooperated with those situated in the United States.

Telstar encountered abnormal radioactivity almost from the time of its launch. On July 9, 1962, a United States nuclear device was exploded above Johnson Island in the Pacific as a part of "Operation Starfish." The explosion took place approximately 200 miles in height and produced a force equal to approximately 1,400,000 tons of TNT. Subsequently, on October 22 and 28, 1962, the Soviet Union caused nuclear explosions to take place in the atmosphere at levels through which Telstar's orbital pattern caused it to transit. The Soviet explosions increased electrons in the area of Telstar's orbital pattern by 100 to 1000 times, and caused Telstar to ingest 100 times more radioactivity than it was equipped to withstand. The immediate result of this artificial increase in the harmful radioactivity within the satellite's orbital pattern was to damage Telstar's translators. The increased radioactivity prevented Telstar from understand-

⁵³ General Electric, as well as other companies, have explored "The feasibility of establishing a commercial satellite system for long-distance communications." Cordiner, "Competitive Private Enterprise in Space," Ramo, ed., *Peace-time Uses of Outer Space* 226, 230-232. Recognition of the role of the private user of space is contained in Valladao, "The Law of Interplanetary Space," *Second Colloquium* 166.

⁵⁴ *American Telephone Share Owners' Quarterly* 5, 8 (1962).

ing and obeying commands broadcast from the earth.⁵⁵ This resulted in a disruption of the intended commercial uses of the satellite, with attendant losses and additional costs.

On February 21, 1963, Telstar I's communication's contact with the earth ceased to function. Radiation had modified the functioning portions of the exterior solar cells which convert sunlight to solar energy. It had also rendered inoperative the communication module which on command from the ground turned on the satellite's communication system. Subsequently, its operational effectiveness has been somewhat restored. Telstar II, a 175 pound experimental communications satellite, was successfully launched at Cape Canaveral (Kennedy) on May 7, 1963. It attained an inclination of 43 degrees, with an apogee of 6690 miles and a perigee of 658 miles. Telstar II relayed a test transmission across the Atlantic on its fourth orbit from American Telephone and Telegraph's experimental station in Andover, Maine. Even prior to launch of Telstar II, it has been estimated that the American Telephone and Telegraph Company has spent in excess of 50 million dollars on such projects.

b. *Other Private Users*

Privately oriented launches in the United States have also served a recreational or avocational goal. At the instance of organized radio amateurs composing the "American Radio Relay League," two short time orbital satellites have been placed in outer space. On December 12, 1961, Oscar I was placed in space with a perigee of 146 statute miles and an apogee of 258 statute miles, and an inclination of 81.2 degrees. It remained in orbit for 50 days.⁵⁶

On June 1, 1962, Oscar II was orbited with a perigee of 129 statute miles and an apogee of 240 statute miles, and an inclination of 74.3 degrees. It remained in orbit 18 days. Both satellites weighed ten pounds and both were supervised and launched by the United States Air Force Systems Command.⁵⁷ As is well known, there have also been private launches in the United States, and presumably elsewhere, of limited height-sounding rockets.

3. Public-Private Users

Because the space race has become so important to the future of nations, many forms of organization have been or will be used to

⁵⁵ *Christian Science Monitor*, January 28, 1963. Excessive radioactivity has also adversely affected transmissions on two U.S. weather satellites (Transit 4 B and Traac), solar cells on the Ariel multi-purpose scientific satellite, and caused postponement of the launch of Anna, an American geodetic satellite.

⁵⁶ *STL Space Log* 18-19 (December, 1962).

⁵⁷ *Ibid.*, 38-39.

maximize national claims. Although nations, or combinations of nations, now appear to possess a monopoly over the launching of satellites and heavy space devices—and this confers upon them a monopoly over devices to be found in areas distant approximately 50 or more miles from the earth—this situation need not necessarily always prevail. While the free enterprise system with its emphasis on private activity is not universal, it is clear that in some areas it is quite capable of operating complete space programs. Where such efforts are not feasible there is still the prospect of some form of mixed sharing of responsibilities between governmental and private managers. Additionally, there is the possibility of private operations with substantial support in the form of assistance and regulation from a governmental entity. Such operations may be conducted through a great variety of forms.

The United States on August 31, 1962, by enactment of Congress authorized the creation of a private satellite corporation. Pursuant to Section 301 of the statute, the corporation was designated as a "profit" making entity "which will not be an agency or establishment of the United States Government."⁵⁸ The policy of the act is "to establish, in conjunction and in cooperation with other countries, as expeditiously as practicable a commercial communications satellite system, as part of an improved global communications network, which will be responsive to public needs and national objectives, which will serve the communication needs of the United States and other countries, and which will contribute to world peace and understanding."⁵⁹ The President in signing the Act called for the effective use of the American competitive free enterprise system in developing an effective communications system.

There will be many points of contact between the government and the corporation established under the Act. Thus, the President of the United States was required to appoint incorporators, and was required to give his approval to the initial articles of incorporation.⁶⁰ The President is charged with the appointment of three of the fifteen members of the Board of Directors.⁶¹ When the corporation engages in foreign business as negotiations, it is obliged to notify the Department of State, and it is the duty of the latter to "advise the

⁵⁸ 76 Stat 419, Section 301. The Act may be cited as the "Communications Satellite Act of 1962." The company is known as the Communications Satellite Corporation.

⁵⁹ *Ibid.*, Sec. 102. (a).

⁶⁰ *Ibid.*, Sec. 302.

⁶¹ *Ibid.*, Sec. 303. (a).

corporation of relevant foreign policy considerations." Further, "the corporation may request the Department of State to assist in the negotiations, and that Department shall render such assistance as may be appropriate."⁶² The corporation must transmit to the President and to the Congress periodic, comprehensive, and detailed reports as to its operations, activities, and accomplishments under the Act.⁶³

The purposes and powers of the corporation are set forth in Section 305 of the Act. Generally speaking, the corporation will engage in the communications business and will use satellites and other scientific and technological equipment to achieve its private business purposes. Although the Act does not prohibit the corporation from establishing its own launching facilities, provision is made among the corporation's authorized activities to "purchase satellite launching and related services from the United States Government."⁶⁴

Other countries, it may be expected, will consider the implementation of their space programs through public-private combinations as well as via governmental agencies and wholly private activities. If the mixed approach is undertaken, it is quite possible that the Communications Satellite Act of 1962 will serve foreign instrumentalities with guidance for their actions.

C. PROBABLE AND POSSIBLE USES OF OUTER SPACE

Having considered some of the more important physical characteristics and capabilities of space vehicles—with emphasis upon present and future orbital patterns—and having also considered present and prospective users of space and space vehicles—with some emphasis upon legal forms through which operations are likely to be conducted—it now becomes necessary to examine in some detail the probable and possible uses of outer space. Although emphasis was placed in Chapter I on the meaning given to the concept of "peaceful uses of outer space," namely, nonaggressive and beneficial uses, this Chapter, hereafter, will endeavor to systematize the particular functions of space devices. The term space device, as previously noted, will include not only spacecraft, launching vehicles, and space vehicles, but also guided missiles.

An attempt has been made to establish a limited number of major space functions. This has resulted in an analysis based on the following six activities: informational, scientific, commercial, military, so-

⁶² *Ibid.*, Sec. 402.

⁶³ *Ibid.*, Sec. 404. (b).

⁶⁴ *Ibid.*, Sec. 305. (a) (3).

cial, and political. Such an analysis is not without its difficulties. Are, for example, such functions as commercial activities truly comparable with political activities—one being principally operational and oriented around the performance of a service and the latter having to do with the more intangible product of policy formulation? Another more practical problem has to do with separating, for the purposes of analysis, functions which in fact are closely interrelated and even overlap. Thus, commercial activities certainly are not devoid of scientific implications, and scientific activities are not immune from commercial features.

Moreover, there is the additional problem of allocating the most pertinent specialized uses to the more general functional activities. Thus, navigation is considered as a part of information, although it could also be treated along with other commercial activities. Or, meteorology might be analyzed under scientific rather than informational activities. Communications might be treated under the heading of military activities rather than under commercial activities. It is clear that there is bound to be a considerable amount of overlap in any conceptual assumptions respecting primacy of use. The more important fact is that space devices and man's increasing uses of outer space must be noted before it becomes profitable to inquire into the legality of their employment.

1. Informational Activities

Mankind's policies and ultimate successes require, as an absolute condition precedent, the acquisition, integration and dissemination of information. Man's adventure in space has supplied him with untold quantities of new data about earth and the heavens. This, probably more than any other single achievement, has been the hallmark of the space age. The societal implications of the newly acquired data and man's enlarging capacity to tap the information bank of the universe is only now beginning to be understood.

a. Weather Meteorology and Forecasting

Sophisticated space devices are now being used to supply basic weather facts. Since natural conditions which produce weather are world-wide in location, it is generally conceded that the cooperative efforts of all nations are required if weather facts are to be integrated.⁶⁵ It is only on this basis that effective weather forecasting can be accomplished, and it is only through such procedures

⁶⁵ Wexler and Johnson, "Meteorological Satellites," in Odishaw, ed., *The Challenges of Space 7-22* (1962).

that the nations of the world can realize substantial economies in natural and human resources.

The benefits of suitable meteorological studies and long-range weather forecasting affect all of mankind.⁶⁶ Illustrations abound. The destructive forces of nature can be considerably abated through advance information on hurricanes, typhoons, and even routine storms. Life on the oceans and on land will be rendered more secure. The displacement of persons from storm centered areas, the relocation of persons in the path of excessive tides and floods, and preplanning for periods of extreme cold, snow, and ice are ready examples.

Substantial benefits reach almost all of the economic areas known to man.⁶⁷ Manufacturers can arrange for delivery of raw materials before oceans, lakes, and rivers become of limited utility. Fishermen can avoid treacherous conditions. Farmers can more precisely and beneficially plant and harvest their crops. Tourists can better enjoy their holidays. Travel can be undertaken under safer conditions. No end of benefits can be depicted. Experts now suggest that weather control is a strong probability for the future.⁶⁸ The implications of a challenge such as this portend much for the future welfare and safety of mankind.

The United States has long maintained a policy of cooperation with other states in the collection and distribution of weather data. An authoritative exposition of this purpose took place on December 3, 1962, when Senator Albert Gore addressed the United Nations First Committee. He stated that world interdependence called for early cooperation in the development of a "truly universal system of weather reporting and forecasting * * * using satellites in outer space."⁶⁹ He noted that the "need for international agreements and international action is pressing in upon us."⁷⁰ He supported technical and financial assistance through the United Nations to member States in order that they might "supplement their resources

⁶⁶ Kaplan, "The Sun and the Earth," in Ramo, ed., *Peacetime Uses of Outer Space* 140-152. See generally, "National Meteorological Satellite Program," *Report of the Committee on Science and Astronautics*, U.S. House of Representatives, 87th Cong. 1st Sess., House Report No. 1281 (1961); "Meteorological Satellites," *Staff Report, Committee on Aeronautical and Space Sciences*, United States Senate, 87th Cong., 2nd Sess., (1962).

⁶⁷ Michael, "Peaceful Uses," in Bloomfield, ed., *Outer Space Prospects for Man and Society*, 42-48 (1962).

⁶⁸ Neiburger, "Utilization of Space Vehicles for Weather Prediction and Control," in Ramo, ed., *Peacetime Uses of Outer Space*, 154-173; Ball, "Shaping the Law of Weather Control," 58 *Yale Law Journal* 213-244 (1949).

⁶⁹ U.N. Doc. A/C.1/PV.1289, at 22.

⁷⁰ *Ibid.*

for strengthening their networks of meteorological observation.”⁷¹ Independently of the United Nations, the United States has donated much equipment and scientific know-how to assist many nations in the development of more sophisticated meteorological programs.

In line with the position urged by the United States, the General Assembly in Resolution 1802 (XVII) on December 19, 1962, invited “United Nations agencies concerned with the granting of technical and financial assistance, in consultation with the World Meteorological Organization (WMO), to give sympathetic consideration to requests from Member States for technical and financial assistance to supplement their own resources for these activities, including the improvement of meteorological networks.”⁷² In the same resolution, and at the instance of the United States, the United Nations recommended that the World Meteorological Organization “in consultation with other United Nations agencies and governmental and non-governmental organizations, should develop in greater detail its plan for an expanded program to strengthen meteorological services and research, placing particular emphasis on the use of meteorological satellites and on the expansion of training and educational opportunities in these fields.”⁷³

The United States has acquired weather data through the employment of two types of artificial satellites, namely, Tiros and Nimbus, and also has used sounding rockets. The United States, in addition to cooperating to this end with the United Nations and with WMO, has entered into a number of bilateral arrangements with other countries. The most notable of the latter has been the Dryden-Blagonravov agreement arrived at in June of 1962, and officially published on December 5, 1962.⁷⁴

At the time of this writing, the United States had orbited successfully eight satellites of the Tiros family. The first was launched on April 1, 1960, and the last was placed in orbit on May 5, 1963. Tiros I, II, III and V are no longer active, although they remain in orbit.

⁷¹ *Ibid.*, 31.

⁷² A/RES/1802 (XVII) 4, Annex 3, *infra*, pp. 446-450.

⁷³ *Ibid.*, 4.

⁷⁴ See, *infra*, pp. 482-488. Further discussions between these two negotiators led to the announcement on March 20, 1963, in Rome, that both the United States and the Soviet Union would coordinate national launchings of weather satellites. As a result of cooperative planning efforts, the two countries will launch weather satellites on different orbits. Photographs will be made of cloud and weather conditions, and pursuant to the agreement data of certain types and characteristics will be exchanged. Such data will also be made available to interested users.

The others are actively in orbit. The perigees range from 367 to 474 statute miles, with the mean perigee being 419 statute miles. The apogees range from 401 to 597 statute miles, with the mean apogee being 499 statute miles. The time for the Tiros satellite to orbit the earth has ranged from a minimum of 97.4 minutes to a maximum of 100.5 minutes.⁷⁵

The importance of weather satellites is seen in the fact that conventional meteorological devices are able to provide weather information for less than one-fifth of the earth's surface. With an adequate number of satellites in simultaneous operation, it would be possible to obtain integrated data on the entire world. The Tiros has been equipped with different kinds of cameras, including TV cameras. Well over 200,000 pictures taken by Tiros have been transmitted to the earth. These have been of clouds, sea ice, and comparable meteorological objects. The satellite has been equipped with radiation tape recorders, and infrared horizon scanners, and has provided information on heat radiation from the earth and its atmosphere. Launches have been scheduled so that accurate data might be supplied during hurricane and typhoon seasons.⁷⁶

With the advent of high operational efficiency on the part of the more sophisticated Nimbus, it is planned to phase out the Tiros operation. The optimum program now contemplated is to provide 24-hour surveillance of the earth's cloud cover. This is not now being achieved because of the limited number of meteorological satellites in operation and the fact that they supply no data during the nighttime. It has been estimated that Tiros sees only about twenty percent of the earth each day.

As a result of satellite capabilities, a new concept of "space weather" has come into being. In the magnetosphere, which includes the areas where the Van Allen Radiation Belts are located, there are situated many electrons and protons—minute building blocks of matter—which are influenced by magnetic fields. The particle population and energies so situated create space weather. In order to measure these factors as affecting man's daily life and his future exploration of space, the Explorer 14 was launched on October 2, 1962. The satellite, weighing 89 pounds, has a perigee of 174/280 statute miles, an apogee of 61,190/61,106 statute miles, an inclination of 32.9/33.6 degrees, and at the time of this writing was in active orbit.⁷⁷

⁷⁵ Data extracted from 2 *STL Space Log*, 12-25 (December 1962); 23 *Facts on File* 226 (1963); 4 *STL Space Log* 26-27 (Summer 1964).

⁷⁶ NASA *Seventh Semiannual Report to Congress* 57-59 (1963).

⁷⁷ NASA *News Release No. 62-210*, October 5, 1962.

It is expected that the Nimbus meteorological satellite will become operational in 1963 or in 1964. It has been designed to point toward the earth at all times while in orbit. Since it will possess a near polar orbit, it will repeat coverage of equatorial areas approximately every twelve hours, or every seventh orbit. In this way there will be readings at least twice each day from a given area, and this will be reported by television cameras during hours of daylight and by infrared sensors during both day and night.⁷⁸ The prospects for this operation, plus the cooperative attitude of other nations in this area, suggest the rather early arrival of an excellent worldwide weather forecasting system.

b. *Geodetic and Navigational Aids*

The successful orbiting of the Transit⁷⁹ and Anna type navigational and geodetic satellites offers ample evidence of the utility of such devices for peaceful, including military, purposes. The prospects for hybrid uses of satellites is illustrated nowhere more clearly than here. A leading spokesman for the United States Navy has described the navigation satellite program as "primarily a nonmilitary effort * * *" ⁸⁰ and one in which the United States and the Soviet Union would benefit through cooperation. An American writer, employed by the Bureau of the Budget, has suggested that the military interest is "predominant enough to warrant assignment * * *" ⁸¹ of the development and operation of navigational satellites to the U. S. Navy, with the hope that the product would be of benefit to civilian and military users.

The navigational satellite will be useful to aerial, space, and shipboard navigation. For example, "Sailors will be able to make use of any one of the navigation satellites to place themselves accurately at any spot on earth, land or sea, day or night, regardless of solar storms, static, or foul weather."⁸² According to Berkner, "Geodetic satellites * * * will provide mapping of the earth that is accurate to

⁷⁸ *Supra* note 76 at 59.

⁷⁹ *Supra*, pp. 59, 62.

⁸⁰ Vice Admiral John T. Hayward, "Space Technology for World Navigation," in Ramo, ed., *Peaceful Uses of Outer Space* 83.

⁸¹ Shapley, "United States Space Program," in Odishaw, ed., *supra*, note 65 at 168. Compare Waggoner, "Department of Defense Space Program," *ibid.*, 199, who considers Transit to be in support of specific military missions, and will "furnish necessary information for ships to determine their positions."

⁸² Bloomfield, *The Peaceful Uses of Space* 15 (1962). For a contrary assessment see Michael, "Peaceful Uses," in Bloomfield, ed., *supra* note 67 at 48-49.

perhaps 50 feet. We can then test such ideas as continental drift without waiting a millenium.”⁸³

Through the use of the navigational satellite, Transit, it is possible to prove the feasibility of an all-weather, world-wide navigational system. Many procedures may be employed to exploit with much accuracy signals received from such satellites. The size and shape of the earth may be accurately ascertained. The geodetic satellite program, Anna, also permits the precise determination of distances and positions on earth. With the orbiting of Anna 1B on October 31, 1962, assurance was provided that the Transit objective of measuring the shape of the earth would be continued. Anna 1B, weighing 350 pounds, has a perigee of 671/673 statute miles, apogee of 728/731 statute miles, and an inclination of 50.5/50.1 degrees. It was in active orbit at the time of this writing. Both Transit and Anna have employed relatively low orbits and have permitted the employment of a “range-only” navigational process (as opposed to the “angle-only” process), whereby a sequence of accurately timed pulses are measured. With the “range-only” process, known as a “doppler system,” distances are determined by measuring the rate of change of range in the measured pulses. The “angle-only” system can also employ satellites, but requires orbits to be at a much higher elevation.

Success in geodetical measurements is important not only for the identification of locations on the surface of the earth. Such measurements have a direct relationship to the tracking of all known space-craft, including the making of valuable predictions as to orbital paths employed by space vehicles.

There is a relationship, in this practical sense, between geodesy and studies currently being carried on relating to the earth’s magnetic field. While no cooperative efforts have been initiated between the United States and the Soviet Union so far as mutual studies of navigation and geodesy are concerned, there is an active program of cooperation in the measurement of the earth’s magnetic field. Thus, the 1962 Dryden-Blagonravov agreement provided for cooperation in the “compilation of a map of the magnetic field of the earth with the aid of artificial earth satellites.”⁸⁴ The agreement also called for certain implementing action including the coordinated launching of two magnetometer equipped earth satellites. One satellite was to be launched by the United States; the second by the Soviet Union.

⁸³ Berkner, “Space Research—A Permanent Peacetime Activity,” in Ramo, ed., *supra* note 80 at 6.

⁸⁴ NASA News Release No. 62-257, 5; U.N. Doc. A/C.1/880. Annex 22, *infra*, pp. 482-488.

Each was to be launched on "mutually agreed orbits."⁸⁵ Each country has undertaken to continue national programs for magnetic measurements in space and to exchange the data processed from such magnetic measurements. Following the launching of such satellites, it was contemplated that there would be a "prompt exchange of standard magnetograms from earth observatories, and * * * [arrangements insuring] that these magnetograms contain all the data required for their use for analyzing the data acquired by satellites."⁸⁶ The 1962 decision was further implemented by the subsequent Dryden-Blagonravov agreement at Rome, March 20, 1963.⁸⁷

c. Observational Facilities

The ongoing perfection of the scientific and technological capabilities of observation type satellites has placed significant stress on the political-legal problems of outer space. These developments have a decided impact upon previously enunciated preferences for an "open" as opposed to a "closed" society. The policy of the United States was summarized by Senator Gore before the United Nations in 1962, when he pointed out that "science has decreed that we are to live in an increasingly open world, like it or not, and openness, in the view of my Government, can only serve the cause of peace."⁸⁸ Observation satellites, in addition to improving navigational and weather information, serve such constructive purposes as measuring solar and stellar radiation, analysis of the temperature and surface conditions on other planets, solar winds radiating from the sun, magnetic fields, sunspot activities, geomagnetic storms, interplanetary magnetic storms, radiation belts, and have, in addition to scientific capabilities, both military and commercial applications. Thus, space vehicles of this category are able to make observations of conditions in space; they are also able to observe conditions on the earth's surface and in the superjacent airspace. From their location in space they can look outward, downward, and toward all immediately proximate areas.

A great variety of satellites have been employed for specialized observational missions. In addition to the United States observational satellites Explorer and Discoverer,⁸⁹ there have been a number of others, including Lofti, Injun, Ranger, Mariner, Alouette,⁹⁰ TRS 1, Midas, Samos, and an unmanned maneuverable inspection satellite,

⁸⁵ *Ibid.*

⁸⁶ *Ibid.*, 6; *New York Times, Western Edition*, March 21, 1963.

⁸⁷ *Christian Science Monitor*, March 21, 1963.

⁸⁸ U.N. Doc. A/C.1/PV.1289 14-15.

⁸⁹ *Supra*, p. 58-59, 61-63.

⁹⁰ *Supra*, p. 78.

commonly referred to as Saint.⁹¹ The Soviets apparently have relied on their Mars and Cosmos type satellites, and possibly others, for comparable observational missions.

At the close of 1963 the United States had launched nineteen Explorer type satellites. These have displayed the capability of achieving a highly elliptical orbit, with perigees generally under 200 statute miles but with apogees on three of them reaching such heights as 10,917, 47,800, and 61,190 statute miles. They have demonstrated a facility to remain in orbit for extended periods, although one remained in orbit for only three days.

The Explorer satellite, which has been managed by NASA, has been used in connection with general scientific investigations in space. Its major focus has been on geophysical and astronomical inquiry, and this type of satellite has furnished much of the current data on the atmosphere.⁹² Recent Explorer launches have continued the general program. Thus, Explorer 14 has monitored "trapped corpuscular radiation, solar particles, cosmic radiation and the solar winds, and * * * [has correlated] particle phenomena with magnetic field observations."⁹³ Explorer 15 studied the location, composition and decay rate of the artificial radiation belt produced by the high altitude nuclear explosion conducted over the Pacific Ocean on July 9, 1962.⁹⁴ Explorer 16 engaged in five micrometeorite experiments. The purpose of Explorer 17 was to measure the density, composition, pressure, and temperature of the earth's rarified atmosphere. Explorer 18's mission included scientific studies and measurements of the radiation hazards from solar flares that astronauts would face in travels between the earth and the moon.

The Discoverer satellite, which has been managed by the United States Air Force, has been reportedly launched successfully nine times between July 7, 1961, and February 27, 1962. Details on subsequent launches, if any, have not been made public.⁹⁵ This satellite has been the most frequently used of all United States satellites, with the launch of February 27, 1962, being the thirty-eighth launch in the series. These have displayed the capability of maintaining relatively low perigees and apogees, with the perigees and apogees of those

⁹¹ Waggoner, *supra* note 81, at 200.

⁹² *Supra* note 72, at 45-49.

⁹³ 2 *STL Space Log*, 30 (December 1962). Compare "The Solar Wind," 3 *STL Space Log*, 32 (March 1963).

⁹⁴ 2 *STL Space Log*, 31 (December 1962).

⁹⁵ 3 *STL Space Log*, 23 (March 1963). Prior to February 28, 1962, 38 launches of this satellite had been attempted with 26 vehicles orbited and 23 capsule recoveries attempted. Twelve attempts were successful.

launched between July 7, 1961, and February 27, 1962, being about 150 statute miles and 300 statute miles respectively. A unique quality of the satellite is that it is equipped to return to the earth's surface on command after orbital periods ranging from eleven to 151 days. The Air Force has demonstrated good success in capturing them in the air while descending or from the water after descent.

The Discoverer satellite program has been "directed toward developing advanced space vehicles and testing subsystems for guidance, control, stabilization, and the recovery of the capsule."⁹⁶ Discoverer 36, for example, tested space vehicle components. It also conducted experiments in radio propagation, radiation effects, and tested instrumentation for nuclear explosion detection.⁹⁷ It has served as the vehicle whereby scientific experiments have been conducted initially, with the expectation that perfected equipment would be employed on more sophisticated models. As a research program, it has provided data on radiation and biomedicine, as well as reliable hardware, techniques, and procedures for the operation and control of space systems.⁹⁸

The United States has launched only one of the Lofti type satellites. It was placed in orbit on February 21, 1961, and reentered on March 30, 1961. Its perigee was 117 statute miles and its apogee was 511 statute miles. Its inclination was 28.4 degrees. Its short life resulted from the failure of the second stage booster to separate from the satellites, and since the several satellites employed in the combined launch weighed 250 pounds, the low perigee was unable to sustain the attendant weight. Lofti itself was a dual purpose satellite. Having an observational objective, it investigated ionospheric effects on VLF radio wave propagation.⁹⁹ As a communications satellite, it investigated the space capabilities of low frequency broadcasting.¹⁰⁰ The experiment disclosed the possibility of using "transitionospheric VLF radio waves emanating from ground stations as navigational aids to manned or unmanned space vehicles; or perhaps, as a means of communicating with submerged submarines through the use of satellites."¹⁰¹

⁹⁶ Department of Defense, *Annual Report for Fiscal Year 1961*, 20 (1962).

⁹⁷ 2 *STL Space Log* 25 (June 1962).

⁹⁸ *Supra* note 96 at 332.

⁹⁹ 3 *STL Space Log* 15 (March 1963).

¹⁰⁰ *Supra* note 96 at 21. The experiment proved that "very low frequency (VLF) radio energy can penetrate the ionosphere at a low angle of incidence." 210, 263.

¹⁰¹ *Ibid.*, 263.

The United States has successfully orbited two Injun type satellites. The first was placed in orbit on June 29, 1961, and the second (known as Injun 3) on December 12, 1962. Injun 1 has a perigee of 534/546 statute miles and an apogee of 634/622 statute miles, with an inclination of 67/66.8 degrees. Injun 3 has a perigee of 153 statute miles and an apogee of 1724 statute miles. Both were in active orbit at the time of this writing.

The United States Navy has been responsible for this program. Data of a general scientific import has been acquired by the Injun satellites. Injun 1 was designed to provide data on the Van Allen radiation belt and the origin of the aurora. Measurements were achieved from above the ionosphere.¹⁰² Injun 3 weighed 114 pounds and was equipped with particle detectors and photometers.

The Ranger type satellite has demonstrated versatility in both planetary and lunar explorations, and has contributed measurably to scientific investigations in space. Rangers 1 and 2, on orbital paths not intended to reach the moon, had perigees of 105 and 98 statute miles respectively, and apogees of 313 and 147 statute miles. Their inclinations were 32.9 degrees and 33.3 degrees. Ranger 1 was in orbit seven days and Ranger 2 for one day.

Ranger 3 and Ranger 4 failed to complete their missions, and presently are on silent lunar orbits. Ranger 5, launched on October 19, 1962, is presently in heliocentric orbit.

NASA was responsible for this program, and has indicated that benefits have been realized from all of the five launches. The general purpose has been to obtain "(1) scientific data on the characteristics of the moon, the planets, the sun, and the environment of space, and (2) engineering data that will advance spacecraft technology."¹⁰³ Rangers 3 and 4 demonstrated the accuracy of the spacecraft, and provided data for use in making hard landings on the moon. Ranger 5 was equipped with a seismometer and radio transmitter to broadcast data from the moon's interior. It also contained a camera system designed to take at least 100 pictures during the lunar approach with the expectation that there would be a very substantial improvement in detail when compared with pictures taken by earth situated observatories.¹⁰⁴ The launches in 1963 and 1964 were designed to provide radiation data and to take television pictures of the

¹⁰² *Ibid.*, 21, 210, 245.

¹⁰³ *NASA Seventh Semiannual Report to Congress* 50 (1963).

¹⁰⁴ *NASA Sixth Semiannual Report to Congress* 66 (1962); *NASA News Release No. 62-213*, October 14, 1962.

moon from a position 800 miles above the earth and terminating with impact on the moon, thus facilitating manned lunar landings.

Mariner 2, also launched by NASA, left the United States on August 26, 1962, and arrived at its destination at about 3:00 P.M. on December 14, 1962. In passing by Venus at a distance of approximately 21,648 miles, it climaxed a journey of 180.2 million miles over 109 and one-half days. This spectacular success was hailed as one of the most impressive scientific and technological achievements of all time. The experiment permitted Americans to obtain information from the vicinity of another planet for the first time in man's long history. As a scientific investigation of space, it provided substantial evidence of American preeminence in space technology.

The launch was designed to accomplish the following objectives: scan the planet's surface, provide electromagnetic data on the planet's temperature and atmosphere, ascertain the strength and direction of the magnetic fields in interplanetary space and those emanating from the planet, discover the qualities of lower energy charged particles in space and near Venus, to measure the energies, directions, and other characteristics of solar and galactic cosmic rays as well as other energy particles trapped near the planet, and to ascertain the size, speed, and direction of such particular matter as cosmic dust in space.¹⁰⁵ NASA's numerous reports illustrate the significance of the successes achieved.¹⁰⁶ Additionally, the two-way Doppler tracking of Mariner 2 during the flight to and beyond Venus has provided information which will contribute to the refining of physical constants necessary to an understanding of the solar system and the Earth.¹⁰⁷

Reference has previously been made to the fact of the cooperative launches of Alouette and Ariel.¹⁰⁸ Both were provided launching support by NASA. The former was designed to determine whether ionosphere electron density remained the same during changes in latitude and time of day, to measure radio noise in outer space and in the ionosphere, and to observe primary cosmic ray particles.¹⁰⁹ The latter had for its purpose the collection and transmission of data "on

¹⁰⁵ *NASA Seventh Semiannual Report to Congress* 55 (1963).

¹⁰⁶ Mariner radiation experiments, *NASA News Release No. 62-271*, December 28, 1962; Mariner Magnetometer experiment, *ibid.*, No. 62-270, December 26, 1962; Solar wind, *ibid.*, No. 62-273, December 28, 1962; Microwave and infrared radiometer results, *ibid.*, No. 63-36-1, February 26, 1963; and, Fields and particles experiments, *ibid.*, No. 63-36-2, February 26, 1963.

¹⁰⁷ *Ibid.*, No. 62-272, December 28, 1962; *ibid.*, No. 63-36-4, February 26, 1963.

¹⁰⁸ *Supra*, p. 78.

¹⁰⁹ *2 STL Space Log* 28 (December 1962).

cosmic rays, radiation intensities in the Van Allen belt, and solar phenomena.”¹¹⁰

The smallest satellite yet to go into orbit was launched by the United States Air Force at an undisclosed date within 90 days prior to November 13, 1962. At the time of this writing it was still in orbit. It has been referred to as TRS because it is a tetrahedral research satellite. It weighs 1.47 pounds and measures six and one-half inches on a side. Only one has been reported to have been launched, and the perigee, apogee, and inclination have not been made public. It has been reported that it has provided data on changes in the Earth’s radiation belt. Despite its small size, it has been readily tracked by United States equipment, and has supplied “up to eight minutes of data on each favorable pass.”¹¹¹

NASA is presently engaged in perfecting the Voyager space vehicle, which, like the more advanced Mariner, will be equipped to orbit Mars and to land heavy capsules.¹¹² It is planned that this type of craft will engage in lunar and planetary investigations.

NASA continues to manifest a substantial sounding rocket program for investigating geophysical and astronomical phenomenon. Rising from 50 to several hundred miles, such rockets permit brief studies of temperature gradients, variations in the qualities of the ionosphere, and “behavior of a mass of water released at an altitude of 65 miles.”¹¹³

In addition to the foregoing programs, the United States Air Force has been identified with three satellite programs known as Midas, Samos, and Saint. All have the same general purpose, namely, to provide a satellite-borne warning system as a part of the over-all defense position of the United States. According to Waggoner, the American development projects “having specific military missions, can be subdivided into three areas: (1) Information-gathering satellites such as the military warning and surveillance types (Samos, Midas), (2) inspection satellites (Saint rendezvous and Vela Hotel nuclear detection satellites), (3) support satellites (Transit

¹¹⁰ *NASA Seventh Semiannual Report to Congress* 47 (1963).

¹¹¹ *2 STL Space Log, op cit.*, 45; *3 STL Space Log* 30 (March 1963). Sputnik 7 weighing 14,292 pounds is the heaviest satellite to have been launched by the Soviets. The United States launched Saturn SA-5 on January 29, 1964 and Saturn SA-6 on May 28, 1964. Each weighed 37,300 pounds. *4 SPT Space Log* 34-36 (Summer 1964).

¹¹² *NASA Seventh Semiannual Report to Congress* 55 (1963).

¹¹³ *Ibid.*, 49.

navigation and Advent communications satellites and the West Ford communications experiment)." ¹¹⁴

Midas 3 was the first successful Midas (Missile Defense Alarm System) launch. It went into orbit on July 12, 1961, at a perigee of 1850/2078 statute miles and with an apogee of 1850/2203 statute miles. It was launched at an inclination of 91.1/91.2 degrees. Midas 4 was launched on October 21, 1961, with a perigee of /2175 statute miles, an apogee of /2330 statute miles, and at an inclination of /95.9 degrees. Both were reported to be in orbit at the time of this writing. According to the Secretary of Defense, the Midas was considered in 1961 to be an air defense weapon. He stated that it "will provide about 30 minutes of warning against ballistic missile attack when it becomes operational. It uses infrared scanning techniques to detect ballistic missiles during their boost phase." ¹¹⁵

Samos 2 was launched successfully on January 31, 1961. It went into orbit with a perigee of 300/287 statute miles, an apogee of 350/344 statute miles, and at an inclination of 97/97.4 degrees. It has been reported that Samos 2 has "returned useful meteorite impact data," ¹¹⁶ and that it is an "observation satellite facility." ¹¹⁷ The Midas and Samos, as information-gathering and observational satellites "are being developed to permit the earliest possible detection of a missile attack on the United States. When Midas is developed and in operation, infrared sensors located in several of these satellites should be able to detect the heat from exhaust flames during a launch occurring anywhere in the world." ¹¹⁸

Not a great deal is known about the Saint type of satellite. Its objective has been stated as "the development of an unmanned maneuverable inspection satellite." ¹¹⁹ In order to be effective in the observation and identification of unidentified space devices, any such satellite must be equipped with nondestructive inspection sensors, orbital control equipment, radar and television procedures, and an effective satellite-to-ground communications system.

Vela Hotel, also, has not been publicized broadly. It is intended to provide long-range protection, and its "objective is the achievement

¹¹⁴ Waggoner, *supra* note 81 at 199-200; see pp. 59, 62 *supra* regarding Transit.

¹¹⁵ Department of Defense, *Annual Report for Fiscal Year 1961*, 330 (1962); 1 *STL Space Log* 38-39 (December 1961); compare, Brennan, "Arms and Arms Control in Outer Space," in Bloomfield, ed., *supra* note 66 at 134-138.

¹¹⁶ 3 *STL Space Log* 14 (March 1963).

¹¹⁷ Department of Defense, *Annual Report for Fiscal Year 1961*, 323 (1962).

¹¹⁸ Waggoner, *supra* note 81, at 200.

¹¹⁹ *Ibid.* 200.

of a satellite system to detect nuclear explosions in space.”¹²⁰ On the basis of the above evidence one can reasonably conclude that Midas, Samos, Saint, and Vela Hotel are designed to permit a State to perfect its defensive military posture. Defensive use of space vehicles, like defensive uses of any military equipment, it may be concluded, accord with the principles and rules of international law.¹²¹

The Soviet Union has also successfully launched a number of information gathering or observational satellites. Among those which have been reported to the United Nations are those in the Mars and in the Cosmos categories.

On November 1, 1962, the Soviet Union placed the Mars 1 in heliocentric orbit with the hope that in May 1963, it would reach the planet Mars at a point some 150 million miles from earth. The Soviet government has described the purpose of the orbit to consist in “Prolonged exploration of outer space during flight to the planet Mars; establishment of inter-planetary radio communications; photographing of the planet Mars and subsequent radio-transmission to Earth of the photographs of the surface of Mars thus obtained.”¹²² Mars 1 was described by the Soviets as an automatic station carried by a space rocket. An American appraisal of the Soviet purposes has included as objectives the analysis of meteoric impacts and interplanetary plasma and gravity measurements.¹²³ These goals are not dissimilar from those achieved by Mariner 2 in the Venus probe.

Between March 16, 1962, and October 20, 1962, the Soviet Union successfully launched eleven artificial earth satellites into outer space. Their perigees varied from a minimum of 115 statute miles to 187 statute miles and their apogees varied from a minimum of 206 statute miles to a maximum of 908 statute miles. The inclinations followed two patterns, one in the vicinity of 49 degrees and the other precisely at 65 degrees. Cosmos 4 remained in orbit for only three days, while Cosmos 1 was in orbit for 270 days. Down to August 28, 1964, the Soviets had reported to the United Nations the launching of forty-four satellites of the Cosmos class. Following Soviet practice, all were launched by military agencies.

According to the Soviet report to the United Nations, the latest Cosmos satellites were launched to engage in an “investigation of the upper atmosphere and outer space.”¹²⁴ It is general American opin-

¹²⁰ *Ibid.* 201.

¹²¹ See pp. 326–331 *infra* for a detailed analysis of this conclusion.

¹²² U.N. Doc. A/AC.105/INF.24.

¹²³ 2 *STL Space Log* 50 (December 1962); Orlen, “Space Programs of Other Nations,” in Odishaw, ed., *supra* note 64 at 205–213.

¹²⁴ U.N. Doc. *supra* note 122 at 2.

ion that the Cosmos research program constitutes a pattern of inquiry designed to provide data on the "energy composition of the Van Allen radiation belt, charged particles in the ionosphere, corpuscular flow and low-energy particles, cosmic rays, the earth's magnetic fields, solar radiation, micrometeorites, formation and distribution of the earth's cloud cover."¹²⁵ If this is true, these efforts would fall under the general heading of scientific investigations in space with emphasis on geophysics, astronomy, and planetary investigations. If comparable to American investigations, those of the Soviets would pursue reasonable peaceful purposes.

d. Communications Media

The prospects for a highly efficient world communications system, made possible by the use of high-orbiting satellites, are justly regarded as a good omen for mankind's slowly maturing spirit of cooperation. Best of all, the day does not seem far distant when such benefits will be within the reach of all peoples and all nations. The United States has long been preeminent in this field.

In the United States the development of communications satellite systems have been activities of governmental and private organizations.¹²⁶ Within the government the major program managers have been NASA and the Army. NASA has been primarily concerned with Echo, Relay, Syncom and Telstar. It has supported private activities in connection with Echo, Relay, and Telstar. The Army has been responsible for the development of Advent. The Defense Communications Agency has developed detailed plans to place in orbit during the first six months of 1966, a system of up to twenty-four communications satellites.

Echo 1 was launched on August 12, 1960, with a perigee of 941/588 statute miles and an apogee of 1052/1246 statute miles and an inclination of 47.2/47.3 degrees. Although weighing but 135 pounds, it was some 100 feet in diameter in order to serve its purpose as a passive satellite. Still remaining in orbit, it has lost much of its spherical shape with the result that it now possesses a widely fluctuating orbit. It was actively employed in communications experiments as late as April, 1962, and during its productive lifetime was used as a reflecting relay for voice and TV transmissions within the United States and for voice signals between the United States and the United Kingdom.

The success demonstrated by Echo 1 has led to plans for the orbiting of an improved Echo 2 during 1963. It has been designed to orbit

¹²⁵ 2 *STL Space Log* 46 (December 1962).

¹²⁶ *Supra*, pp. 38-40, 80-88.

at 700 miles above the earth, to have an inclination of 80 degrees, to remain in orbit for about 680 days, and will exceed Echo 1 in diameter by 35 feet and in weight by 365 pounds. Like its prototype, it will be employed for extended voice and TV transmissions. Pursuant to the Dryden-Blagonravov agreement in Rome on March 20, 1963, a consensus has been reached as to the type of instruments to be employed on Echo 2. It was also mutually determined that the radio frequency to be employed would be 116 kilocycles.¹²⁷

On January 25, 1964, NASA put Echo 2 into orbit. Weighing 547 pounds it is a passive reflector communications satellite transmitting on 136.021 and 136.170 mc. Its perigee varied from 633 to 644 statute miles, while its apogee varied between 816 and 819 miles. Its inclination in degrees from the equator was 81.5, and it circled the earth in about 108 minutes.

Relay 1 was placed in an elliptical orbit on December 13, 1962, having a perigee of 819 statute miles and an apogee of 4612 statute miles, and an inclination of 52 degrees. It was designed to conduct telephone, television, radio, teletype, photo-facsimile, and data tests between points in the United States and others in England, France, Germany, Italy, and Brazil. Operational details were effected through the cooperation of the Bell Telephone Laboratories and an International Telephone and Telegraph Company facility. Unlike Echo, Relay 1 was an active repeater-type satellite. It proved able to receive and transmit wideband signals, demonstrated a capacity to maintain operational effectiveness despite damage from concentrations of radioactivity, and provided general experience for an eventual operational communications system.¹²⁸ It was successful in performing all of its experiments and missions.¹²⁹

Syncom 1 was launched successfully on February 13, 1963, but failed to maintain the designed synchronous altitude of 22,300 miles above the earth. It had been planned to maintain Syncom 1 in a twenty-four hour orbit at an inclination of thirty degrees so that the orbital period would very closely approximate the speed of the orbiting earth below. Had the satellite achieved its designed synchronous altitude, it would have served as an active repeater and would have provided narrow-band communications via two transponders. Syncom 1 was a joint project of NASA and the Department of Defense.

On July 26, 1963, NASA successfully launched Syncom II. It was initially placed in orbit 22,300 miles in space and by August 15, it

¹²⁷ *New York Times*, Western Edition, March 21, 1963.

¹²⁸ *NASA Seventh Semiannual Report to Congress* 64 (1963).

¹²⁹ *NASA News Release* No. 63-57 (March 22, 1963); *ibid.*, No. 62-258 (December 11, 1962).

had been delicately nudged into an on-station position above 55 degrees west longitude, thereby moving it from an original position above the east coast of Africa to a permanent position over Brazil. In this position it appears to trace an elongated figure 8 along the 55 degrees west meridian to points 33 degrees north and south of the equator. The figure 8 conformation is caused by the angle at which the satellite crosses the equator while in orbit.

The communications capabilities of Syncom II are very extensive. While it does not transmit TV pictures as Telstar does, it does relay telephone conversations, radio broadcasts, teletype messages, and radiophotos. It operates within day and night reach of 90% of the free world's telephones, and in September, 1963, carried the voice portions of the addresses made at the General Assembly of the United Nations to countries located in Europe and Africa.¹³⁰ Future synchronous satellites are expected to be placed in equatorial orbit so that they will hover like an unmoving dot in the sky.

The advantages of three Syncom type satellites orbiting at an altitude of 22,300 miles may be compared with twenty to twenty-five of the Echo 1 type satellites orbiting at an altitude of 1,000 miles. It has been stated that "World-wide multichannel all-weather television broadcasting from three fixed 24-hour-orbit satellites could reach all the villages and all the peoples equipped with low-cost television receivers."¹³¹ Kappel has acknowledged the presence of important difficulties in the operation of 24-hour satellites, and after investigation, the American Telephone and Telegraph Company proposed a system "employing a number of active satellites orbiting a few thousand miles in space."¹³² This procedure is being counted on to provide the public with adequate telephone service by way of satellites.

The feasibility of the Syncom type communications satellite has been investigated in several countries. The United Kingdom in March, 1963, expressed a strong interest in mounting a civil-military satellite communications system before 1970. Like the American plan it would provide three stationary satellites at a height of 22,300 miles. The British decision was in part based on the possibility that

¹³⁰ For an extensive symposium on "Worldwide Satellite Communications," see *1 Astronautics and Aerospace Engineering* 23-78 (September 1963). Compare, *NASA News Release No. 63-207*, September 17, 1963.

¹³¹ Libby, "Atomic Energy and Space," in Ramo, ed., *supra* note 80, at 195.

¹³² Kappel, "Communications in the Space Age," in Ramo, ed., *ibid.*, footnote, p. 52; compare Pierce, "Hazards of Communications Satellites," in Odishaw, ed., *supra* note 64, at 66-68, and Silk, "The Impact on the American Economy," in Bloomfield, ed., *supra* note 66, at 178-82.

satellites at the 8,000 mile range would encounter destructive radioactivity. It was in part based on the desire to offer commercial competition with other national systems. Additionally, the British have foreseen the need for a combined civil-military communications system.¹³³

The substantial contributions being made by the Telstar program in the satellite communications field has already been discussed.¹³⁴

The United States has been engaged since 1960, in developing "a military capability for high capacity, secure, and world-wide instantaneous radio communication by using high-altitude hovering satellites."¹³⁵ Like the Syncom type satellite, Advent was designed to hover at 23,300 miles above the equator. Three such satellites are planned to relay information between surface stations, including mobile naval vessels, on ninety percent of the earth's surface.¹³⁶ The use of a naval mobile terminal illustrates the world-wide capabilities of such a system. Advent has been described as a support satellite, comparable to Transit with its concern for navigational situations.¹³⁷ The Air Force project, West Ford, included the launching of dipole reflectors as a communications experiment.¹³⁸

The satellite and other space devices have become principal tools for the conducting of communications activities in outer space. It is submitted that their use to date has been both practical and reasonable. As such, it is possible to conclude that their use falls within the range of peaceful uses, and therefore conforms to the announced policy of the United States. The next section will provide illustrations of additional uses, both at an operational and at more esoteric levels of discourse.

2. Scientific Activities

Science, as an international discipline, has shown slight regard for national boundaries. Scientists have not only given us the atomic-space age. They have also been largely instrumental to date in obtaining international agreement for practical peaceful uses of outer

¹³³ *Christian Science Monitor*, March 28, 1963.

¹³⁴ *Supra*, pp. 103-104.

¹³⁵ *Department of Defense, Annual Report for Fiscal Year 1961*, 234 (1962).

¹³⁶ *Ibid.*, 160.

¹³⁷ Waggoner, "Department of Defense Space Program," *supra* note 76, at 200.

¹³⁸ See *supra*, pp. 101-102.

space.¹³⁹ They have also worked hard to bring man's social thinking abreast of his space capabilities.¹⁴⁰

a. General Research

The space age is, more than any other single thing, a tribute to scientific and technological creativeness. The pyramiding effect of increased discovery has served to make the present period one of superior scientific attainment. Space is providing an environment for scientific and technological research. The space competition between the United States and the Soviet Union has already demonstrated that highly significant research has been accomplished with respect to astronomy, astrophysics, biology, geophysics, and psychology, among others. Technological advancement has led to the perfection of such items as metals, lubricants, structures, plastics, and instrument design.¹⁴¹ One important by-product of the augmented scientific and technological era has been the spin-off or incremental knowledge and know-how made available to consumer-based industries.¹⁴² This has had a favorable economic impact on national economic bases.

The rigorous individual preparation involved in proficient space research has, in its aggregate, contributed materially to the intellectual preeminence of nations and has thereby augmented positions of power. It is unquestionably true that the readiness of the nonspace powers to cooperate in scientific space activities is motivated at least in part by the national benefits, and possible advantages to be realized through the acquisition of scientific and technological data.

b. Exploration and Experimentation

Space science and technology have contributed to the easier accumulation of data from all the corners of the world. The highest priority has been given by the two major space powers to the accumulation and dissemination of such data. Informal as well as formal efforts have developed to facilitate observational and reporting tech-

¹³⁹ Jenks after commenting on the success of international scientists in cooperating on space programs, asks, "Why, then, cannot we as lawyers leave to the scientists the whole or major responsibility for the success of international cooperation in space?" "The International Control of Outer Space," in *Legal Problems of Space Exploration* 739 (1961).

¹⁴⁰ Galloway, "The Community of Law and Science," *First Colloquium* 59-65 (1959).

¹⁴¹ *Supra* pp. 55-77. Compare, Michael, "Peaceful Uses," in Bloomfield, ed., *supra* note 66, at 55-59.

¹⁴² Berkner, "Space Research—A Permanent Peace Time Activity," in Ramo, ed., *supra* note 80, at 7, 11. It undoubtedly has also enhanced the role of the scientist in political-legal decision making.

niques. This cooperation has been based on the very pragmatic fact that the careful analysis of all acquired evidence is a mandatory condition precedent to the full and effective use of the scientific process. The areas and procedures which have been most effectively exploited have been discussed above.¹⁴³

c. Protection against Disease and Forms of Contamination

Space planners have been concerned with the twofold problem of preventing the spread of earth diseases into space and the possibility of the contamination of earth from outer space. Berkner has pointed to the latter situation. "While the danger seems very small of bringing back to earth an organism that would lead to fatal epidemics, or might even destroy our food or air, it is nevertheless finite."¹⁴⁴ He has called for adequate scientific inquiry to establish that such dangers are not real as a condition governing the return to earth of scientific space samples and space voyagers. The legal implications of such possible findings have been considered by Congressman Overton Brooks, who has served as chairman of the committee on Science and Astronautics of the House of Representatives. He has written: "The dangers of interplanetary contamination are far-reaching and not at all fanciful. They are certainly a proper subject for space law."¹⁴⁵

The grave consequences resulting from man's contamination of outer space have been studied by American biologists. In discussing the possibility of infecting the planets with terrestrial forms of life, it has been suggested that it might be possible through the introduction of microbial organisms to "occupy the entire planet in days or weeks. By the time a later probe was sent it would be too late to study the planet in its virgin condition, denying us an inestimable prize for the understanding of our own life and its origins."¹⁴⁶ Contamination of outer space might, it has been suggested, deny man the opportunity to engage in commercial exploitation of the planets. Further, there is the need to "face the conceivable moral problems raised by the thought of our contaminating an already inhabited planet."¹⁴⁷ In order to avoid such detrimental conditions as these it has been suggested that launching States must engage in a vigorous program of decontamination by means of gaseous fumigation.¹⁴⁸

¹⁴³ *Supra*, pp. 88-106.

¹⁴⁴ Berkner, *supra* note 80, at 13.

¹⁴⁵ Brooks, "The Place of Government in the Utilization of Space," in Ramo, ed., *ibid.*, 209.

¹⁴⁶ Novick and Lederberg, "Challenges to Biology," in Odishaw, ed., *supra* note 64, at 95.

¹⁴⁷ *Ibid.*

¹⁴⁸ *Ibid.*

In 1958 the international scientific community, through the International Council of Scientific Unions (ICSU), established a special Committee on Contamination by Extraterrestrial Exploration (CETEX). This committee has come forward with "an international code governing the control of contamination of celestial bodies."¹⁴⁹

3. Commercial Activities

While the two major space powers continue to engage in an intense scientific competition—induced by the magnitude of the stakes involved—they will not overlook the fact that the challenges of and in space take many forms. Not the least have been, and will continue to be, the commercial implications of space science and technology.

Such commercial implications are of two sorts. In the first place there continues to exist a hope that tangible space resources, as well as the use of space for transiting purposes, will have commercial value. Secondly, the cost of space research and practical applications incident thereto have produced a very substantial benefit to the economy of nations. In the United States large and increasing sums have been expended by the national government to provide a substantial space capability. NASA's budget was 56.9 million dollars in fiscal year 1955, and was one billion, six hundred and seventy-one million for fiscal year 1962. For the same years the Department of Defense received, respectively, three million and one billion, one hundred and sixty-eight million dollars. The total expenditures in the United States for space activities in 1955 was 60 million dollars. By 1962 it had increased to three billion dollars, with the Atomic Energy Commission, the National Science Foundation, and the Weather Bureau sharing in appropriations.¹⁵⁰

a. Resource Exploitation

Space exploration has already resulted in great adventures for mankind, and hopes for the commercial exploitation of the newly usable environment take many forms. In the sense that outer space is an enormous laboratory many benefits have already been derived. Space exploration has provided not only data for man's scientific analysis of this previously forbidden part of the universe; there is

¹⁴⁹ Schwartz, "International Space Organizations," in Odishaw, ed., *supra* note 64, at 250. CETEX made recommendations concerning nuclear contamination as well as bacterial pollution. *Infra*, pp. 312-318.

¹⁵⁰ Silk, "The Impact on the Economy," in Bloomfield, ed., *supra* note 66, at 83. Appropriations for fiscal year 1963 for NASA reached 3.7 billion, with well over another billion being allocated to other departments and agencies engaged in space activities. President Kennedy in 1963 recommended a 1964 authorization for NASA of 5.7 billion dollars.

the present expectation that man will discover new elements in space, which, when returned to earth will serve the needs of mankind.

Scientific probes so far conducted do not disclose the presence of earthlike elements in space possessing commercially exploitable qualities, and even assuming that rare minerals or substances are found upon the moon or planets—the problem of returning such materials to earth has yet to be demonstrated as feasible. Thus, for the time being, and perhaps for the very long future, the most valuable resource being exploited in space is knowledge itself.¹⁵¹

b. *Transportation*

Until the environmental conditions conducive to human habitation in space have been ascertained, it is premature to consider commercial travel via spacecraft. However, this does not hold true as respects the movement of persons and cargoes by means of missile-type rockets or X-20 type craft to distant parts of the earth. Practical estimates have been made concerning weights, costs, and fares. At hypersonic speeds, of less than the orbital speed of 18,000 miles per hour, Faneuf has calculated that a passenger might expect a fare of \$710 for a 4,000 mile trip, \$730 for 6,000 miles, \$750 for 8,000 miles and \$770 for 10,000 miles.¹⁵² When it has been demonstrated that there is a demand for such services, it is likely that a functional type international agency, possibly within the aegis of the United Nations, will be utilized for purposes of management and control.

c. *Weather Control*

The commercial exploitation of weather data is already a thriving business in many areas. This service includes not only weather forecasting, but has extended to the inducement of rainfall. Enhanced knowledge of weather conditions has been one of the greatest contributions of the space age. Use of this knowledge will provide abundant benefits.¹⁵³ The future may hold opportunities for important controls, with great benefit or harm to mankind depending upon how the forces of nature are employed.

¹⁵¹ Teller, "Outer Space Travel—What Is and What Is Not Possible," in Ramo, ed., *supra* note 80, at 261. He states that because of the manufacture of synthetic diamonds there is no shortage on earth, and that it would be much too expensive to transport gold and uranium, even if found in a pure state. See McDougal, Lasswell, Vlassic and Smith "The Enjoyment and Acquisition of Resources in Outer Space," 111 *University of Pennsylvania Law Review* 634 (1963); *infra*, pp. 263-277.

¹⁵² Faneuf, "Application of Space Science to Earth Travel," Ramo, ed., *supra* note 80, at 96.

¹⁵³ *First Report on the Advancement of Atmospheric Sciences and Their Application in the Light of Developments in Outer Space*, World Meteorological Organization (1962). *Supra*, pp. 17, 38-39, 80-93.

d. Communications Media

It may be predicted that private and public enterprise will continue to operate extensive communications satellite systems. With the proliferation of such efforts it may be expected that there will be extended efforts to regulate radio frequencies, orbital paths, assignment of operational priorities, control of launches, registration of operational details, provision for the recapture and return of equipment, and the development of rules on jurisdiction and liability.¹⁵⁴

4. Military Activities

It is generally recognized that it is not possible to make sharp distinctions between military and nonmilitary space activities. Essentially military activities in this area are not restricted to defense establishments. In the United States, for example, scientific inquiry having military implications is engaged in by NASA, as well as by private organizations. By the same token, scientific investigations having little, if any, connection with direct military uses have been undertaken by the Department of Defense.¹⁵⁵ The close interrelationship of separate investigations has been evidenced by cooperation between these two and many other units of government.

Remarkable unanimity exists on the part of commentators as to the fact of interdependence and interrelationship between nonmilitary and military uses of space. This conclusion has been summarized as follows: "Virtually every activity in space has a possible military connotation; military and nonmilitary uses are extraordinarily interdepartment."¹⁵⁶ In this respect, space devices, including satellites and missiles, add nothing to the total range of man's activities, except to provide him with a new dimension in which to engage—if he will—in ancient and historic practices. The use of the atom has been compared with the use of outer space. The existence of atomic weapons, it has been pointed out, does not require military purposes. The same is equally true for naval vessels, aircraft, motor

¹⁵⁴ First Report by the International Telecommunication Union on Telecommunication and the Peaceful Uses of Outer Space, International Telecommunication Union (1962); *infra*, pp. 263–319.

¹⁵⁵ Shapley, "United States Space Program," in Odishaw, ed., *supra* note 64, at 166–170; Waggoner, "Department of Defense Space Program," *supra* note 91, at 195–197, 202–203; *Department of Defense Annual Report for Fiscal Year 1961* 20–21 (1962).

¹⁵⁶ Lipson and Katzenbach, "The Law of Outer Space," in *Legal Problems of Space Exploration* 806 (1961). Compare "Report of the Committee on Law of Outer Space—Recommendations: 1959, American Bar Association: Section of International and Comparative Law," *ibid.*, 575–576; Jessup and Taubenfeld, *Controls for Outer Space* 267–272 (1959).

vehicles, and revolvers. The latter, it hardly needs saying, are used by criminals as well as policemen. Thus, just as science and technology are inherently neutral in a moral, political, and legal sense, so are the products which they have created. Their use may contribute as readily to the destruction of the world community as to its emancipation from war, death, famine and pestilence.

Despite the fact of significant interrelationships between essentially nonmilitary and military uses of space vehicles, it is clear that ballistic missiles and rockets may have a primary military purpose. It has been proven that missiles and rockets are efficient military weapons. The specific utility of satellites as military weapons remains speculative, although there is no doubt that indirectly they contribute to an effective military potential and may, perhaps, achieve over a period of time, effectiveness as direct means of combat.¹⁵⁷ There is no doubt, however, that if satellites achieve the quality of direct military weapons that national policies will have to make provision for means to defend against such weapons in space.¹⁵⁸ Much of the present space effort is being directed to examine the feasibility of satellites as weapons and also anti-satellite countermeasures.

In this connection on June 1, 1961, the Deputy Secretary of Defense while appearing before the Senate Committee on Aeronautical and Space Sciences, discussed the interrelationship between military and nonmilitary uses of outer space. He stated that "It is important to recognize and understand that there are some space applications which are distinctly military; others which are of mutual interest for civilian as well as military use. Still other missions are, at present, primarily of civilian or scientific interest. However, these latter will provide fundamental knowledge which may provide a basis for military application at some future date. Similarly, out of military programs, technical data is produced which has civilian application."¹⁵⁹

The United States, while engaged in leading world opinion in support of the peaceful uses of outer space, has taken into account the prospect of security through deployment of nuclear weapons in

¹⁵⁷ Whelan, "Goals of the U.S.S.R. in Space," in *Soviet Space Programs*, 48-50 (1962).

¹⁵⁸ Knorr, "On the International Implications of Outer Space," 12 *World Politics* 570-575 (1960); compare Schelling, "The Military Use of Outer Space, with Particular Reference to Bombardment Satellites," in Goldsen, ed., *International Political Implications of Activities in Outer Space* 36-48 (1960); Golovine, *Conflict in Space* 87-109 (1962).

¹⁵⁹ Quoted by Waggoner, *supra* note 81 at 195.

space. Deputy Secretary of Defense Gilpatric made the following statement on September 5, 1962:

The United States believes that it is highly desirable for its own security and for the security of the world that the arms race should not be extended into outer space, and we are seeking in every feasible way to achieve that purpose. Today there is no doubt that either the United States or the Soviet Union could place thermonuclear weapons in orbit, but such an action is just not a rational military strategy for either side for the foreseeable future.

We have no program to place any weapons of mass destruction into orbit. An arms race in space will not contribute to our security. I can think of no greater stimulus for a Soviet thermonuclear arms effort in space than a United States commitment to such a program. This we will not do.

At the same time that we are pursuing cooperative scientific efforts in space through the United Nations and otherwise, we will of course take such steps as are necessary to defend ourselves and our allies, if the Soviet Union forces us to do so. This is in accordance with the inalienable right of self-defense confirmed in the United Nations Charter.

We now have an active and extensive military space program, addressed to two objectives:

First, as part of our overall defense effort, we have continuing programs to ensure that the United States will be able to cope with any military challenge in outer space. Our programs in this area are under constant review, and this review indicates that our present rate of effort is entirely adequate.

Second, as a part of our national space program, we in the Defense Department, along with NASA, are actively exploring the potentialities of outer space as a useful part of our expanding universe.¹⁶⁰

He then outlined United States efforts to enhance its leadership in such fields as communications, navigation, meteorology, mapping, and geodesy. From his remarks it is possible to conclude that in the formulation of American policy relating to the uses of outer space full account is being taken of the hybrid capabilities of missiles and satellites.¹⁶¹

President Kennedy in his message of March 28, 1961, dealing with the problem of national defense, asserted that American arms would

¹⁶⁰ Department of Defense Press Release, No. 1426-62, 3-4 (Sept. 5, 1962).

¹⁶¹ *Ibid.*, 4.

not be used to strike the first blow in any attack, and that American strategic arms and defenses must be adequate to deter any deliberate nuclear attack on the United States or her allies.¹⁶² Ballistic missiles have steadily assumed a more significant role in the policy of strategic deterrence.¹⁶³

It may be concluded that both ballistic missiles, directly, and satellites, indirectly, have military utility. This does not automatically exclude them from the category of peaceful uses, since defensive and deterrent capabilities serve the cause of peace. It is only when such devices are intentionally used for aggressive purposes that they lose their peaceful status.¹⁶⁴

Barring an effective general and complete disarmament program between major nations, the possibility always remains that outer space will be used for direct military purposes. Certainly at the present time outer space is being used in ways which contribute to the defensive or security position of nation-states. The right of nation-states to defend their security is a fundamental tenet of international law. In commenting upon this right of nations, President Kennedy stated on November 20, 1962, while discussing the Soviet build-up in Cuba: "We, of course, keep to ourselves, under the United States Constitution, and under the laws of international law, the right to defend our security. On our own, if necessary—though we, as I say, hope to always move in concert with our allies, but on our own, if that situation was necessary to protect our survival or integrity or other vital interests."¹⁶⁵

a. *The Right of Self-Defense*

Brief reference will be made here to legal grounds supporting the employment of space devices for military, i.e., nonaggressive and beneficial, purposes. In view of the right of a nation-state to maintain its existence, it may look to its defense in time of peace and it

¹⁶² Department of Defense Annual Report for Fiscal Year 1961, 4 (1962).

¹⁶³ *Ibid.*, 6.

¹⁶⁴ *Supra* pp. 41–44, 53. This is well understood in the Soviet Union. Whelan, *supra* note 157, at 50–59. Compare, *ibid.*, 300–306.

¹⁶⁵ *New York Times*, November 21, 1962. In 1914 Elihu Root described the "right of self-protection" as one "recognized by international law. The right is a necessary corollary of independent sovereignty. It is well understood that the exercise of the right of self-protection may and frequently does extend in its effect beyond the limits of the territorial jurisdiction of the State exercising it. Each sovereign state has the right to protect itself by preventing a condition of affairs in which it will be too late to protect itself." "The Real Monroe Doctrine," 8 *A.J.I.L.* 432 (1914). Compare Cooper, "International Control of Outer Space—Some Preliminary Problems," *Third Colloquium* 23–24 (1961).

may employ permitted weapons in time of war. This is generally referred to as the right of self-defense or the right to engage in the defense of national security. That such right exists has never been challenged. Included within this larger right is the right to employ limited coercive force in time of peace.

Under general customary international law a nation-state possesses the unquestioned right to defend itself against the aggressive conduct of another state or states. This is an ancient and inherent right, and is a foundation upon which much of international law has been constructed.

The national right of self-defense has also been provided for in Article 51 of the United Nations Charter. The governing provision reads: "Nothing in the present Charter shall impair the inherent right of individual or collective self-defense if an armed attack occurs against a Member of the United Nations, until the Security Council has taken the measures necessary to maintain international peace and security." This language reaffirms the fact that self-defense is an inherent right, refers to the fact that such defense may be individual or collective, and recites that an "armed attack" by another State or collection of States is the condition precedent for individual or collective self-defense.

Two principal interpretations of the term "armed attack" are now found in the literature of international law. One is a literal, or restrictive, construction of the language. The second is less literal and constitutes a more realistic and a more acceptable interpretation of the expression. The process of construing the Charter of the United Nations, like the historic experience in providing continuing life for the Constitution of the United States, offers much evidence of the need to relate legal concepts—particularly when contained in Charters and Constitutions, and thereby phrased in general language—to the ongoing realities of the social complex.¹⁶⁶

¹⁶⁶ Christol and Davis, "Maritime Quarantine: The Naval Interdiction of Offensive Weapons and Associated Materiel to Cuba, 1962," 57 *A.J.I.L.* 525 (1963). Compare Chayes, "The Legal Case for U.S. Action on Cuba," 47 *Department of State Bulletin* 763 (1962), and "Law and the Quarantine of Cuba," 41 *Foreign Affairs* 552 (1963). Mallison, "Limited Naval Blockade or Quarantine-Interdiction: National and Collective Defense Claims Valid under International Law," 31 *George Washington University Law Review* 339 (1962); Meeker, "Defensive Quarantine and the Law," 57 *A.J.I.L.* 515 (1963); Fenwick, "The Quarantine Against Cuba: Legal or Illegal?" 57 *A.J.I.L.* 588 (1963); "Some Comments on the 'Quarantine' of Cuba," 57 *A.J.I.L.* 592 (1963); McDougal, "The Soviet-Cuban Quarantine and Self-Defense," 57 *A.J.I.L.* 597 (1963). See also Wright "The Cuban Quarantine," 57 *A.J.I.L.* 546 (1963).

The narrow or restrictive interpretation of Article 51 is based on the assumption that there can be but one acceptable construction of "armed attack," namely that defensive action may not be taken legally until after an initial actual armed attack has been instituted against a nation in repose by an aggressor. This view has been referred to as a concept of "passivity" or the "sitting duck" doctrine, and received much criticism.¹⁶⁷ It is now generally held that such an excessively narrow view of Article 51 is quite out of keeping with the dynamic quality of law and with the tempo of the atomic-space age. Scientific and technological factors alone argue against the acceptance of this view.

The broader, and more acceptable rule, is that customary international law recognizes the inherent right of a state or states to engage in self-defense in provocative circumstances, particularly when a state has reasonable cause to believe that its national existence is imperiled or proximately endangered because of the implementation by another state of a known, dangerous and aggressive course of conduct. Article 51 in confirming the inherent right of a state to engage in self-defense upholds this rule of customary international law. The broader construction contributes directly to the security of nations from foreign aggression, and thereby provides a sounder base for a world community.¹⁶⁸

b. The Maintenance of International Peace and Security

An alternative legal basis to Article 51 is Chapter I of the United Nations Charter. This Chapter, consisting of Articles 1 and 2, supports the validity of action by members of the Organization to maintain international peace and security. Since the terms of the Charter are not limited in their application to the earth, and have in fact been extended to outer space,¹⁶⁹ members of the United Nations may validly engage in measures in outer space to maintain international peace and security. This right is derived from the basic premise that a State may engage in measures protective of its national existence.

Unlike the rule of self-defense, which has been implemented either via individual or collective means, the maintenance of international peace and security has generally been considered to be a collective

¹⁶⁷ Comments by Adolf Berle and Oliver Lissitzyn in *Columbia Law School News*, p. 1:3 (November 7, 1962); McDougal, "The Soviet-Cuban Quarantine and Self-Defense," 57 *A.J.I.L.* 601 (1963).

¹⁶⁸ Bowett, *Self-Defense in International Law* (1958); Brownlie, "The Use of Force in Self-Defense," 37 *Brit. Yb. Int'l L.* 183 (1961).

¹⁶⁹ *U.N. Res.* 1721 (XVI), Annex 2, *infra*, pp. 443-446; *U.N. Res.* 1802 (XVII), Annex 3, *infra*, pp. 446-450; *U.N. Res.* 1962 (XVIII), Annex 4, *infra*, pp. 450-452.

process. This has been based on the fundamental premise that collective international activity in the security field is generally more conducive of satisfactory results than when such action is pursued unilaterally.¹⁷⁰ International law is in a state of flux concerning unilateral maintenance of international peace and security. Article 2 (4) of the Charter contains the pledge of members that they will "refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations." In commenting on this provision in the context of the other purposes and principles of the Charter,¹⁷¹ the Legal Adviser of the Department of State has said: "States living under the régime of that Charter can no longer find justification for the use of force in their mere unilateral declaration."¹⁷²

Another basis for collective action, outside the United Nations Charter, but related to it, exists in the right of regional international organizations to maintain or enforce international peace and security.¹⁷³

The 1947 Inter-American Treaty of Reciprocal Assistance, signed at the Rio Inter-American Conference for the "Maintenance of Continental Peace and Security," provided in Article 6 that whenever any "fact or situation that might endanger the peace of America" existed, the signatories "shall meet immediately in order to agree on the measures * * * which should be taken * * * for the maintenance of the peace and security of the Continent."¹⁷⁴

It may be concluded that nation-states may rely upon all pertinent principles and rules of international law in engaging in security and defensive measures in outer space. Among the major doctrines available to States are the general customary rules of international law which authorize reasonable action in support of national self-defense. Reliance may be based upon the broad view of Article 51 and upon the right to maintain international peace and security as pro-

¹⁷⁰ Christol and Davis, *supra*, note 166, at 537.

¹⁷¹ Article 1 (1) provides for the maintenance of "international peace and security;" Article 1 (2) imposes on members the duty to "strengthen universal peace;" Article 2 (3) requires that members must not endanger "international peace and security;" and Article 2 (6) imposes on non-members the duty to conform to "the maintenance of international peace and security."

¹⁷² Chayes, "Law and the Quarantine of Cuba," 41 *Foreign Affairs* 553 (1953). For an appraisal see *supra* note 157.

¹⁷³ McDevitt, "The UN Charter and the Cuban Quarantine," 17 *JAG Journal* 71 (1963); Meeker, *supra* note 166, at 518-522.

¹⁷⁴ 62 Stat 1681; T.I.A.S. No. 1838; 43 *A.J.I.L. Supp.* 53 (1949).

vided for in Articles 1 and 2 of the Charter. The two Charter concepts are not opposites. They are alternatives, and may be applied concurrently. In addition, pursuant to regional undertakings, such as the Rio Pact, States may engage in collective measures to maintain and enforce international peace and security.

5. Social Activities

Under this heading brief reference may be made to the influence of general space activities on the cultural standards of nations. Specialists in many fields have been attracted to the novel challenges of the space age. The fields of interest are as broad as the encyclopedic curricula of great universities. Thus, intellectual interest has been wide-ranging with broad exchanges of views among experts in many fields. Such exchanges have not been unduly restricted by national frontiers.

There has also been a cross-fertilization of similar disciplines. Of even greater interest has been the bringing together for common purposes of intellectual disciplines formerly as distant as law and science. There has been a great mobility of ideas. As a result there has developed a more broadly based and substantial world culture. With a growing cultural maturity—thanks to the broad interest in space—it is becoming possible to make judgments as to which disciplines are most qualified to keep abreast of the on-going forces of the social complex.¹⁷⁵

a. Expansion of Human Knowledge and Resulting Personal Satisfactions

Space activities have been characterized by a universal interest in the individual benefits to be derived from this new environment. With the conquest of space there have been attendant personal rewards and satisfactions. Not the least has been the extension of human knowledge together with challenges to human values. This has resulted in demands for an orderly space environment, and in turn has led to demands for the application of principles and rules of law to space activities. It has also provided mankind with a maturing moral experience. One result has been to link space with such enduring goals of mankind as higher material conditions and even the ultimate expectation of a permanent world peace. This surging hope of mankind has been observed by Congressman Anfuso, who stated in 1959, with respect to the "deeper meaning of our emergence into outer space" that this had provided new challenges "to man's moral

¹⁷⁵ Rode-Verschoor, "The Influence of the Exploration of Outer Space on Mankind," *Second Colloquium* 134-138 (1960).

sense, his curiosity and capacity for wonder, his faith and reverence in God, and his spirit of adventure.”¹⁷⁶

The use of space as a means for the flowering of mankind’s capabilities, as a social animal, has been well depicted by Andrew G. Haley. He has written:

There is a final factor common to both short- and long-term aspects of space flight that is not subject to rational justification. This is the undisputable fact that, because of human curiosity and zest for adventure, people simply want to explore the new frontier. It is a fundamental urge, as elemental as the new desire for material comfort or bodily security.

And for the individual, the largest direct benefit will be a sense of participation in a great adventure, and a new breadth of understanding the universe around him.¹⁷⁷

6. Political Activities

Although outer space activities have had a serious and substantial impact upon the totality of the social complex, it is necessary to single out for special comment the explosive changes which have been wrought in the political arena. Space forces have worked on politics in several ways. First, there has been the impetus of clearly ascertainable practical results, such as the data accumulated from a single launch or a series of launches, manned or unmanned. Secondly, and of equal if not greater significance, has been speculation as to future practical uses of space devices. Both of these forces have impinged with dramatic force upon policy makers and all who help to focus the attention of major policy makers upon more or less desirable objectives. The role of policy makers, at whatever level of authority, takes on added significance in a new and developing field.¹⁷⁸ For this reason effective liaison between policy makers, legal planners, and leaders of the scientific community is of particular applicability in developing the law of outer space.

¹⁷⁶ Anfuso, “Is Space the Way to Peace and Abundance?” *Second Colloquium* 1 (1960).

¹⁷⁷ Haley, “Space Exploration—the Problems of Today, Tomorrow and in the Future,” *Second Colloquium* 47; Compare Yeager “Space and Cogno-Politics: a Third Force in World Affairs,” *ibid.*, 169–176; Keating, “Space Law and the Fourth Dimension of Our Age,” *First Colloquium* 83 (1959); Yeager, “A Code for a New Frontier,” *ibid.*, 116–121.

¹⁷⁸ Goldsen, ed., *Outer Space in World Politics* 3–24 (1963). Compare, Horelick, *The Soviet Union and the Political Uses of Outer Space* (1961) and Horelick in Goldsen, ed., *supra* at 43–70 (1963).

a. National Prestige

National prestige is a weapon of immeasurable worth in the international political forum. That spectacular successes in outer space have modified the prestige of nation-states and have had direct influence upon the international power balance is so commonplace as to hardly require mention. In international politics it is not possible to avoid the fact that nation-states are competitive, and that standings in the competition of whatever sort—the fastest ocean liner, the largest number of Nobel prize winners, the most substantial foreign aid program—play a role in the formulation and execution of policy. The areas of competition in space are many, and there can be no doubt that the state which first places a man on the moon or some equally spectacular achievement will reap some political benefit. The process of converting political advantage into other tangible results is ever present. This may account for the fact, along with the requirement of maintaining adequate defensive postures, that substantial amounts of money and efforts are being dedicated to leadership in space.

The problems connected with the translation of space activities into elements of national prestige have been clearly identified by James R. Killian, Jr., who, in an analysis of basic policy considerations, has said:

Since World War II the status-seeking nations of the world community have relied increasingly on science and technology to build their prestige. The Soviets especially have used technology as an instrument of propaganda and power politics, as illustrated by their great and successful efforts—and careful political timing—in space exploration. They have sought constantly to present spectacular accomplishments in space technology as an index of national power, and too often the press and the public at large have interpreted their spectacular exploits as indices of Soviet strength and scientific accomplishment.

It must be admitted that spectacular accomplishments have temporarily enhanced the prestige of the Soviet Union, and we can all admire their achievements. But I doubt that their expansive emphasis on space exploration will be enough in the long pull to sustain either an image of strength or actual strength. This will be accomplished by a balanced effort in science and technology. True strength and lasting prestige in science and technology will come from the richness, variety, and depth of nation's total effort and from an outpouring of great discoveries

and creative accomplishments on a wide front by its scientists and engineers.¹⁷⁹

It was his conclusion in 1962, that in the long run the United States would be better served by avoiding unnecessary and excessive competition in prestige type space projects. However, it cannot be denied that the world political process is influenced by the successful equation of spectacular space exploits with prestige.¹⁸⁰ The attention being given in the United States at the present time to substantial successes in outer space is evidence of this fact.

b. *Policy Analysis and Formulation*

Outer space, as a patently real, and potentially critical area for mankind, has become an extremely sensitive focal point for national and international analysis and planning. This has come about for substantial reasons.

Space activities have demanded a rather special attention because of their known and predicted capabilities. These activities are both dynamic and tentative. This focuses attention on the centrality of their importance for policy analysis.

It is in such a focus that science, technology, defensive considerations, hopes for peaceful uses, intellectual preeminence, and all the rest—directly responsive to the overriding tempo of the times—constitute an important flux auguring so much good or so much harm to mankind. This is all summed up by man's constant reference to the “space age.” Indeed, it is not too much to say that at this moment, and because of man's profound stake in space, national policies toward space very materially condition or substantially influence all other national policies. This is in large part the product of major concerns over the ultimate uses of outer space. This concern has been magnified by the great unknowns awaiting discovery in space.

Pending mankind's becoming more at home in and better qualified to judge his future in outer space and its impact upon his traditionally earth-bound patterns, this area will constitute a special param-

¹⁷⁹ Killian, “Shaping a Public Policy for the Space Age,” in Bloomfield, ed., *supra* note 66, at 183–184.

¹⁸⁰ Lall, “Space Exploration—Some Legal and Political Aspects,” *Second Colloquium* 76–78, 97–105 (1960); Dr. Edward C. Welsh, executive secretary of the National Aeronautics and Space Council, in supporting an American lunar program, said in 1963, that national prestige was one of several motivating considerations. He advanced five reasons for a lunar effort: “To test gear for more distant space travel; to develop technology; to insure against losing prestige ‘so essential at the negotiating table’; to develop skills and products with great potential economic impact, and to help build the capability to deter aggression.” *New York Times*, April 4, 1963.

eter for his earthly hopes and fears. So long as this condition exists, national and international space policies—both in contemplation and in fact—will be most carefully inspected in order to determine the influence of such programs upon the balance of man's ongoing processes and purposes. Keen insight into the general policies and special concerns of nations may be acquired through an accurate and systematic forecasting of their programs and expectations in outer space.

c. International Cooperation

It has often been said that if States were able to base their policies upon principles of good will that nowhere could this be better demonstrated than in their outer space relations. This is based, at least in part, on the belief that national activities in space involve common national benefits, and that the mutual self-interest of nations constitutes a substantial inducement to international political and legal accommodation. Moreover, it has been suggested that because of the mutuality of space interests and problems, and the extraordinary dangers which confront states which fail to demonstrate a cooperative attitude in such matters, that these very interests and problems will induce states to embark upon cooperative approaches to meet their rational, common advantage. It has also been suggested that, assuming space to possess these inducements to limited cooperation, such cooperation would lead inevitably—and probably sooner than later—to general international cooperation.

While it is too soon to render a final judgment on this imaginative idea, it is probably safe to say that at the moment space has neither completely achieved nor failed to achieve the quality of a catalyst envisioned by the proponents of the concept. That effective international cooperation is one of man's grandest desires and most significant values is almost universally accepted as a fact. However, when this concept is placed in juxtaposition with practical problems raised by national views of advantage, welfare, and security it readily becomes clear that varying national viewpoints may provide friction rather than cooperation. It is true that "the use of outer space may create new international problems and tensions. We should not forget, however, that it also increases the incentives and opportunities for nations to live together in peace and harmony."¹⁸¹ Space, not unlike other areas used by men, requires international cooperation for its most effective utilization. Conservation of resources, allocation of limited radio frequencies, for example, as well as general efficiency require international cooperation. Without such regulation and con-

¹⁸¹ Brooks in Ramo, ed., *supra* note 81, at 209–210.

trol, one can only imagine an ultimate condition of anarchy in outer space.¹⁸² In order to enlarge the benefits achievable through the exploitation of outer space, many institutions—both public and private—have been devised or existing ones enlarged to manage international cooperation.¹⁸³

As has been suggested by Odishaw, the “challenges implied in the exploration of space are not restricted to science.”¹⁸⁴ A major challenge is to man himself. If he can meet it, there is a very substantial possibility that the chances for international cooperation engendered in space may at long last be brought back to earth.

d. A Unifying Force for Peace

Proceeding one step further, it has been suggested that the end product of international cooperation in space matters will be a more peacefully oriented universe. The rationality of this concept depends, at least in part, on some alleviation of the uneasy nuclear stalemate which now confronts major international powers. Fortunately, the balance of terror has produced only a “cold war” condition as between major powers. So long as this condition exists the multiple factors of the social complex continue to provide mankind many international options—including the extremes of hot war and peace.¹⁸⁵ Whether mankind may be able to resolve these problems in a suitable political and legal fashion is the subject to which attention is next directed.

¹⁸² Jessup and Taubenfeld, *Controls for Outer Space and the Antarctic Analogy* 193–284 (1959).

¹⁸³ Schwartz, *International Organizations and Space Cooperation* (1962).

¹⁸⁴ Odishaw, “International Cooperation in Space Science,” in Bloomfield, ed., *supra* note 66, at 119.

¹⁸⁵ Keating, *supra* note 177, at 89. “The essence of a suggested space law, whether or not adopted in itself, may spill over into other areas of international law and thus exert an influence for lasting peace.” He quotes a 1958 address by Charles S. Rhyne: “Perhaps joint effort on law for peaceful control of Outer Space can pave the path to legal machinery to insure peace on planet Earth.” *Ibid.*, 85. Compare Anfuso, *supra* note 176, at 1; Lall, *supra* note 180 at 75; Yeager, *supra* note 177, at 173; and Kecstemeti, “Outer Space and World Peace,” in Goldsen, ed., *supra* note 178, at 25–42.

CHAPTER III

THE DEVELOPMENT OF THE LAW OF OUTER SPACE

A. LEGAL PRINCIPLES AND RULES

A brief reference to the way in which legal "principles" and "rules" will be used will contribute greatly to an understanding of the problems involved in the development of the law of outer space.

International law, it has been said, is a body of principles and rules binding upon states, international organizations, and individuals. A more traditional characterization of international law is that it is a body of principles and rules generally accepted by civilized states as governing their interrelationships. A common element of these vastly different approaches is that international law encompasses principles and rules.¹

The major difference between a principle and a rule is that the former is intentionally broad in its coverage and fundamental in its orientation. Rules are narrower, more specific, and are put forward in terms of penalties in the event of noncompliance. Principles, like rules, are intended to be interpreted. Nonetheless, principles tend to be associated with eternal verities, whereas rules are more readily affected by the pressures of the social complex and are, therefore, less stable and less impressive in their historic acceptability.

The distinctions made by Pound are persuasive, and are accepted here. He holds that a "principle is an authoritative starting point for legal reasoning."² The principles are the product of developed experience. It is experience which society has determined to be significant and rests upon reasoned differences. As illustrations of legal principles he refers to "where one intentionally does something which on its face is an injury to another he must respond for the resulting injury unless he can justify it." Or, "One person is not to be unjustly enriched at the expense of another."³

Rules, on the other hand, are precepts which attach "a definite detailed legal consequence to a definite detailed state of facts."⁴ Il-

¹ Christol, "Remedies for Individuals Under World Law," 56 *Northwestern University Law Review* 66-68 (1961).

² Pound, *Justice According to Law* 56 (1951).

³ *Ibid.*, 56-57.

⁴ *Ibid.*, 56.

lustrations are cited from primitive codes, as in the Code of Hammurabi, "If a free man strike a free man he shall pay ten shekels of silver," or, in the Roman Twelve Tables "If a father sell the son three times, let the son be free from the father."⁵ Since it is not possible to imagine all possible fact combinations and assign legal consequences to conformity or failure to conform, the concept of the principle lends itself to a more satisfactory description of total legal possibilities.

In international law it is customary to refer to principles of sovereign equality of states, national existence, national independence, self-defense, international peace and security, etc. It has been common practice to refer to these principles as fundamental rights.⁶ The rules of international law on the other hand relate to more prosaic subjects, such as guides to treaty interpretation, procedures for obtaining diplomatic privileges and immunities, factors to take into account in the event of the nationalization of foreign property, etc. The distinctions between principles and rules in international law can be well drawn, and there should be no cause for confusion.

The principles and rules of international law are practiced. Although they exist in a loosely organized legal order they may be enforced, as well, depending upon the nature of the problem, the mutuality of interests, and the totality of the pressures contained within the social complex of a given time and place.⁷ It has been pointed out that the rules of international law, no matter how perfectly stated, cannot enforce themselves. Even so, it is well to recall that it is erroneous to believe "that legal rules are useless if they do not in themselves guarantee lawful activity."⁸ States, in considering the application of legal principles and rules to the use of outer space by space devices, will be obliged to take into account the fundamental right and duty relationships envisioned in such concepts.

⁵ *Ibid.*

⁶ Fenwick, *International Law* 213-214 (3d ed. 1948). Paton has described the role and function of legal principles. "Through the medium of the principle, law can draw nourishment from the views of the community, for the *ratio legis* is wide and, in deducing from it a particular rule, regard may be paid to the circumstances to which the rule is to be applied." Principles serve to give cohesion to a particular branch of the law, take into account practical needs and ethical requirements, and are "elastic enough to afford opportunities for development in the rules that are based upon it." Paton, *A Text-Book of Jurisprudence* 176 (2nd ed., 1951).

⁷ I Hyde, *International Law Chiefly as Interpreted and Applied by the United States* 14-15 (2nd ed. 1945).

⁸ Johnson 55, *Proceedings of the American Society of International Law* 165 (1961).

Attention will now be directed to the international principles and rules, and to the rights and duties confronting states, and other international persons, in the rapidly emerging law of outer space.

B. THE DECISIONAL PROCESS

It is necessary to inquire initially if the traditional source of international law, custom, has as yet established norms of conduct for the use of space devices. Attention will be directed to an analysis of other international law sources in following sections.

1. Custom: Collaborative Activities and the Uniformity of Expectations

In order to determine whether there now exists a customary international law for certain uses of outer space, it is necessary to focus on a set of highly interesting facts. It is also necessary to relate this set of facts to the components of customary law. By comparing the facts with the legal standards and characteristics of custom, it will be possible to come to certain significant conclusions.

a. Collaborative Activities

The present large scale use of outer space by space devices resulted primarily from the exploration of outer space by scientists during the International Geophysical Year, July 1, 1957, to December 31, 1958.⁹ The successful employment of space devices during this period by scientists from 66 states has resulted in continued cooperative efforts in the areas of rockets and satellites. It has also contributed materially to the development of additional cooperative procedures for the same and different kinds of space devices for the period since January 1, 1959.

The relationship of such practices and experiences is so important to the development of an international law of outer space that the highlights of these efforts need be briefly recounted.

The IGY was designed as a coordinated, scientific effort whereby man would be permitted to comprehend more fully his multidimensional physical environment. Through the IGY many thousands of scientists, the world over, acquired a new understanding of the earth beneath, the air and water about, and the universe around him. Despite the fact that the IGY took place during the period of serious political unrest and contention, cooperation among scientists, without regard to nationality, was readily achieved. The appraisal of Dr.

⁹ See generally Chapman, *IGY: Year of Discovery* (1959); Marshack, *The World in Space* (1958); Sullivan, *Assault on the Unknown: The International Geophysical Year* (1961); Wilson, *I.G.Y., The Year of the New Moons* (1961).

Hugh Odishaw, Executive Secretary, United States National Committee, IGY, is a challenging one. He stated "the IGY is the single most significant peaceful activity of mankind since the renaissance and the Copernican revolution."¹⁰ The IGY was an important element of the larger scientific revolution which has been described as the event which has influenced mankind more than any other since the rise of Christianity.¹¹ These conclusions, which appear to be well merited, cannot but have a great influence upon the future course of international law.

The concept of an International Geophysical Year dates back to a discussion at the home of Dr. James A. Van Allen on April 5, 1950. Dr. Lloyd V. Berkner referred to the fact that 1957-1958 would be a period of unusually high sunspot activity, and would fall twenty-five years after the Second Polar Year. Since several eclipses were scheduled for the same period, it appeared to be an unusually propitious moment for extended scientific investigations. Berkner, with the approval of the group, presented a program of scientific investigation to an international scientific body known as the Mixed Commission on the Ionosphere during midsummer 1950. The latter referred it to the International Council of Scientific Unions (ICSU). The original notion of a polar study was modified as the result of the interest displayed by scientists engaged in meteorological, magnetic, and electrical research. When the ICSU General Assembly met in October, 1952, Dr. Sydney Chapman of Queen's College, Oxford, who had been present at the Van Allen home in 1950, suggested that the name be changed to International Geophysical Year. This proposal was adopted. ICSU, in order to further the project, established a Special Committee which during the summer of 1953 scheduled a meeting attended by representatives of the numerous scientific unions which composed ICSU.¹² At this time a transition between man-

¹⁰ Report on the International Geophysical Year, February 1959, Hearings before the Subcommittee of the Committee on Appropriations, House of Representatives, 86th Cong., 1st Sess., 17 (1959); hereafter cited Report on The IGY, 1959; Odishaw also referred to the importance of the satellite program. He said "The successful launching of artificial satellites in the IGY program is a pioneering and historic event per se. It has ushered in the space age. It will inevitably lead to greatly increased knowledge of the earth and the solar system. The space age, taken in its fullest technical sense, means that a new era of science is opening up, with all that that suggests." *Ibid.*, 19.

¹¹ Butterfield, *The Origins of Modern Science* viii (1949).

¹² *Supra*, pp. 81-84. ICSU has been described by Odishaw as "a non-governmental quasi-holding company, composed of subject-matter unions covering various fields of science with headquarters at The Hague." In Goldsen, ed., *International Political Implications of Activities in Outer Space*, 59 (1960).

agement of the program by ICSU and its component scientific unions took place, with national IGY committees assuming broad responsibilities. The national committees were coordinated under the title of *Comité Spécial de l'Année Géophysique International* (CSAGI). It was this group which was to be generally responsible for the scientific planning of the IGY.¹³

In the United States the national committee (USNC-IGY) was appointed by Dr. Detlev W. Bronk, Chairman, National Science Board, and President, National Academy of Sciences. The chairman of USNC-IGY was Dr. Joseph Kaplan, and he was assisted by five substantive committees in the fields of data processing and Antarctic, Arctic, Continental, and Equatorial Activities. He was also assisted by thirteen technical panels, including an earth satellite program under the chairmanship of Dr. Richard W. Porter and a rocketry program under the chairmanship of Dr. Fred L. Whipple.¹⁴ It is important to note the titles of the other panels since the satellite and rocket programs provided means to acquire scientific data in almost all of these fields. They were aurora and airglow, cosmic rays, geomagnetism, glaciology, ionospheric physics, longitude and latitude, meteorology and nuclear radiation, oceanography, seismology and gravity, solar activity, and world days and communications. Scientists in the Soviet Union also organized their research activities under the foregoing headings.

During the summer and early fall of 1954, three private international scientific bodies adopted resolutions dealing with the use of satellites during the IGY. Of the resolutions adopted by the International Scientific Radio Union and the International Union of Geodesy and Geophysics, the one adopted by CSAGI at its General Assembly in Rome on October 4, 1954, is most pertinent. The CSAGI General Assembly, after considering the research capabilities of both rockets and satellites, resolved as follows:

In view of the great importance of observations during extended periods of time of extra-terrestrial radiations and geophysical phenomena in the upper atmosphere, and in view of the advanced state of present rocket techniques, CSAGI recommends that thought be given to the launching of small satellite vehicles, to their scientific instrumentation, and to the new prob-

¹³ Sullivan, "The International Geophysical Year," 521 *International Conciliation* 269-271 (1959).

¹⁴ *International Geophysical Year, A Special Report Prepared by the National Academy of Sciences for the Committee on Appropriations of the United States Senate*, 84th Cong., 2d Sess., 24-27 (1956).

lems associated with satellite experiments, such as power supply, telemetering, and orientation of the vehicle.¹⁵

As a result of these recommendations the USNC-IGY, after determining the feasibility of satellites for scientific purposes, on March 14, 1955, recommended an IGY satellite program to the President of the National Academy of Sciences and the Director of the National Science Foundation.¹⁶ On May 6, 1955 the USNC-IGY special panel on satellites transmitted "the proposed program to the Government through the National Science Foundation. Late in July, the Government's approval of the satellite program permitted the chairman of the USNC to notify CSAGI of our plans."¹⁷

An exchange of informative letters then took place between Dr. Kaplan and Dr. Chapman, who at this time was President of CSAGI. On July 26, 1955, Kaplan wrote:

The Committee on behalf of the National Academy of Sciences wishes to inform you at this time that, in response to the CSAGI resolution, the program of the United States for the International Geophysical Year now includes definite plans for the launching of small satellites during the International Geophysical Year.

The United States National Committee believes that significant scientific data may be gathered as a result of this program in such fields as geodesy, atmospheric physics, ionospheric physics, auroral physics, and solar radiation. The participation of other nations engaged in the International Geophysical Year is invited, and to this end we shall provide full scientific information on the orbiting vehicle so that other nations may monitor the device and make appropriate observations. The United States National Committee looks forward to the interest and

¹⁵ 5 Rocket and Satellite Conference Document 4 (September 25, 1957); also quoted by Odishaw "The Satellite Program for the International Geophysical Year," 35 Department of State Bulletin 281 (1956); Additional CSAGI resolutions were adopted at the Western Hemisphere Regional Conference, Rio de Janeiro, 1956, the General Assembly, Barcelona, 1956, the joint CSAGI/CSA Conference, South Africa, 1957, and the Western Pacific Regional Conference, Tokyo, 1957. These resolutions dealing with the use of rockets and satellites for scientific purposes, called for the dissemination of acquired research data, designation of polar orbits, compatibility of tracking and telemetering systems, launching schedules and quality of instrumentation. 5 R&S Conf Doc. Supra, 5-10.

¹⁶ Odishaw, *ibid.*

¹⁷ *Ibid.*

cooperation of other nations in what it hopes will be one of the great scientific achievements of our time.¹⁸

In his response to Dr. Kaplan dated August 3, 1955, Dr. Chapman wrote that he was pleased to learn that "your Committee felt able to resolve to construct and launch small satellites as a part of the United States contribution to the International Geophysical Year and to announce these plans publicly."¹⁹ On July 29, 1955, President Eisenhower, through his press secretary, announced that he had "approved plans by this country for going ahead with the launching of small unmanned earth-circling satellites as part of the United States participation in the International Geophysical Year * * * The President expressed personal gratification that the American program will provide scientists of all nations this important and unique opportunity for the advancement of science."²⁰

The foregoing expressions occasionally appear to denote an official or public character for the United States IGY rocket and satellite programs. Although the broad details of the IGY programs were planned and initiated by scientists around the world, the scientists were compelled to secure funds, as well as logistic support, from national governments in order to embark upon their imaginative plans.²¹

The IGY program could, of course, have been managed in several ways. It might have been implemented through scientists acting independently of their national governments and in cooperation with scientists, acting as individuals, situated throughout the world. Or, it might have been approached politically, with the programs being entirely initiated and managed by governments. In view of the governmental support needed by and given to the scientists, it might have been regarded as a mixed effort. It has always been the position of the United States that the power to make decisions as to policy and plans was in the hands of the individual scientists (some of whom were in the employ of the national government), and that the policy and planning influences of the government were minimal. In the United States, government interest in policy matters, to the extent that it existed, depended upon the government's need to be kept aware of funding and logistical support requirements. The influence of such matters on the policies and plans of the scientists was quite

¹⁸ *Ibid.*, 281-282.

¹⁹ *Ibid.*, 282.

²⁰ "Plans for Launching of Earth-Circling Satellites," 33 *Department of State Bulletin* 218 (1955); Odishaw, *supra* note 15, at 282.

²¹ Odishaw, *ibid.*

limited. The great freedom given to United States scientists in this kind of situation has been applauded by Killian. He has said that "international groups of scientists seem able to achieve cooperation of great importance when they are free of political entanglements and can act freely with the tropism toward cooperation which is traditional among scientists."²²

In the United States the link between scientists and national government was effected under the "joint auspices of the National Academy of Sciences and the National Science Foundation."²³ Several illustrations of the planning, policy, and managerial roles of the scientists may be mentioned.

In July 1955, plans to send scientists to the Antarctic were fixed by them at an IGY meeting in Paris. Details were worked out for the establishment of about 30 scientific stations by about twelve countries. Further, the scientists "mapped out a coordinated plan for appropriately spacing the scientific stations and agreed on the establishment of an Antarctic Weather Central where information can be pooled, collated, and disseminated. They worked out common safety procedures and reached other amiable decisions about their joint effort."²⁴ Scientists interested in the IGY rocket and satellite programs coordinated extensively in selecting and manning tracking and observational facilities. Agreement was also reached as to the appropriate radio channel for use by the United States radio tracking system for Explorer I and Explorer III and Vanguard I, namely 108 and 108.03 mc.²⁵ The Soviets received 20.005 and 40.002 mc. for Sputniks I to III.

In order to understand the impact of space activities during the IGY on the development of a customary international law of outer

²² Killian, "Shaping a Public Policy for the Space Age," in Bloomfield, ed., *Outer Space Prospects for Man and Society*, 190-191 (1962); Compare, Meany, "Cooperation in Science, Culture and Education," 37 *Department of State Bulletin* 765 (1957).

²³ *White House Press Release*, March 28, 1955, 32 *Department of State Bulletin* 644 (1955). For a delineation of ways in which United States scientists may be related to the national government, see DuBridge, "Policy and the Scientists," 41 *Foreign Affairs* 571-573 (1963).

²⁴ Rudolph, "Geophysical Science and Foreign Relations," 33 *Department of State Bulletin* 990 (1955).

²⁵ Odishaw, *supra* note 15, at 283-285. Glennan has noted that "In the space activities initiated during the IGY it was found desirable to exchange information on the planning of experiments, to give prompt notice of launchings, early information on orbits, and such other data as would permit participation of others in observations of scientific value." "Opportunities for International Cooperation in Space Exploration," 42 *Department of State Bulletin* 61 (1960).

space it is necessary to characterize the nature of such activities. Although much of the planning and management of scientific activities were in the hands of private persons—most often scientists—such activities received substantial governmental assistance. The case of the United States is illustrative.

Just as many governments gave assistance to their national IGY committees, so the United States provided substantial assistance to the United States National Committee. Beginning in 1954, Congress provided some forty-three million dollars for the United States scientific aspects of the program.²⁶ The Navy added logistic support in the Antarctic through the use of the icebreaker, the U.S.S. *Atka*, and in Operation Deep Freeze I.²⁷ The Department of State "worked with the American scientists in their planning. It has lent its facilities for developing cooperative arrangements with scientists in other countries when such arrangements were appropriate."²⁸

The Department of Defense provided much assistance to the USNC-IGY in its rocket and satellite program.²⁹ Additional assistance came from the Coast and Geodetic Survey, the Weather Bureau, and the National Bureau of Standards. Additional assistance came from private organizations and institutions, especially the universities.³⁰

By way of illustration it may be noted that in private negotiations for the establishment of a world data center to be located in the United States and to be used in the collection, collation, and distribution of scientific information, American scientists took the position that they would commit the United States to an expenditure of two million dollars. The uniqueness of the situation was described by Odishaw as follows: "We took that position not being in fact sure that we could guarantee it. We agreed for purely scientific reasons; yet, one could say that we had committed the United States. Nevertheless, a certain freedom of maneuver was left to the government because it was not committed officially. Any embarrassment from a refusal by the U.S. government to implement our share would have fallen mainly upon the Academy of Sciences and the scientists involved."³¹ Through a myriad of such private understandings,

²⁶ Atwood, "The International Geophysical Year in Retrospect," 40 *Department of State Bulletin* 682 (1959).

²⁷ Rudolph, *supra* note 24, at 990.

²⁸ *Ibid.*, 991.

²⁹ Atwood, *supra* note 26, at 684.

³⁰ Odishaw, *Report on the IGY, 1959*, *supra* note 10, at 20.

³¹ Odishaw, "Comments," in Goldsen, *supra* note 12, at 77-78.

buttressed by substantial governmental support in money and in services, a pattern of international cooperative conduct emerged.

The IGY clearly demonstrated the ability of scientists from sixty-six countries to work together through their nongovernmental international organizations.³² The scientists as the "producers, supporters and consumers"³³ of international scientific activity were organized on a private national basis. Nonetheless, they were frequently mobilized by governmental bodies to embark upon the vast explorations of the IGY. This was well summarized by Odishaw:

First, it was not a government program, although governments at home and abroad supported it generously. Second, it was not a military program, although the military establishments of many governments, like our own, provided a variety of logistic support. Third, it was not an 'internationalized' program, even though one of its greatest achievements was in the field of international cooperation. The very fact that it was none of these things accounts for a large measure of its success, scientific and international.

What it was and what it is is this: A gathering together of private human beings, each of whom had a vital personal interest in a particular subject, each of whom felt that this subject needed, out of its own exigencies, a concerted attack, but one for which a simple, uncluttered mechanism would suffice.

Thus the IGY was at root an enterprise of private persons, an enterprise in the hands of doers, and the form and shape it took largely reflect this. This form and shape reveal much about the character of the IGY and may well afford a pattern worth noting, worth using again in other areas.

Deliberations at the general assemblies suffered from no obvious considerations of national 'face,' or considerations of official positions in other areas or at other times, as formal governmental deliberations inevitably appear to do. Energies were directed to the restricted problem at hand. By and large, the problem's own objectivity led to objectivity in discussions, conduct and action.³⁴

Even before the IGY had come to a close, participants were making plans for continuing the researches conducted during 1957 and

³² Atwood, *supra* note 25, at 682.

³³ Brode, "National and International Science," 42 *Department of State Bulletin* 736 (1960).

³⁴ Odishaw, *Report on the IGY*, 1959, *supra* note 10, at 19–20. Compare, Odishaw, "International Geophysical Year," 128 *Science*, No. 3339 (1958) and 129 *Science*, No. 3340 (1959).

1958. The successor organization in the United States was known as International Geophysical Cooperation-1959 (IGC-59). Thus, public support for privately initiated space activities was extended in the years immediately following the close of the IGY.

IGC-59 was proposed by the Soviets shortly prior to the 1958 CSAGI meeting in Moscow. United States scientists discussed the proposal advanced by Soviet scientists with representatives of the United States government in order to ascertain governmental policy on the extension of the IGY. Following a review of reasons why IGC-59 might be established, and after consultations between leading American scientists and representatives, it was decided that Americans would cooperate with three programs during the IGC-59. These three programs dealt with network activities, funded major programs, and special projects. The network activities included the fields of meteorology, ionospheric physics, vertical incidence, geomagnetism, oceanography, and tide gages. The funded areas included the Antarctic and space science programs, which the United States had planned to continue on a national basis in any event. The special projects areas included investigations of aurora and airglow, cosmic rays, geomagnetism, glaciology, gravity, ionospheric physics, longitude and latitude, meteorology, oceanography, rocketry, seismology, and solar activity.³⁵

According to Kaplan there were five major reasons for continued geophysical cooperation during 1959:

- (i) The fact that many IGY programs and projects got started late in 1957; (ii) observations of large scale geophysical phenomena, as for example, atmospheric circulation and sea level changes, incidence of aurora, etc., require extensive observations of the kind fostered by IGY for as long as possible; (iii) observations of phenomena related to solar effects should be continued through the diminishing part of the solar cycle to capitalize fully on the IGY observations during the peak of the greatest cycle ever observed; (iv) to provide for the possibility of modifying certain programs to secure scientific information of greater significance and greater value to the elucidation of early IGY information; and, (v) to maintain international geophysical cooperation on an operational level to provide for continuity to future cooperative programs (oceanography, space exploration, Antarctic, Arctic, etc.) which are now being planned and

³⁵ Kaplan, *supra* note 10, at 8-10.

for which international committees have been or may soon be established.³⁶

Because of the unwillingness to terminate a scientific program which was able to supply valuable data, the IGY was replaced by the IGC-59, the USNC-IGY was replaced by the USNC-IGC, and CSAGI was replaced by the Special Committee for Inter-Union Cooperation in Geophysics (SCG). Despite the changes in nomenclature the manifest intent of the earth-space scientists, with the approval of their respective governments, was to continue the basic scientific research engaged in during 1957-1958. The United States scientists in contemplating IGC-59 were aware that "rocket and satellite programs would be largely under the sponsorship of NASA, and that the 1959 program in the Antarctic was already implemented."³⁷ The National Aeronautics and Space Administration had been created on July 29, 1958, and thereupon established an Office of International Programs.

Nonetheless, private scientific space activities involving the use of rockets and satellites were to be continued, with such research to be coordinated through ICSU's new Committee on Space Research (COSPAR). The latter had been established during ICSU's General Assembly meeting in Washington in October, 1958. According to the ICSU resolution, the purpose of COSPAR was "to provide the world scientific community with the means whereby it may exploit the possibilities of satellites and space probes of all kinds for scientific purposes, and exchange the resulting data on a cooperative basis."³⁸ It was assigned the responsibility of "continuing and fostering, after the end of the IGY, international cooperation in all sciences that make use of the new research tools of rockets and satellites."³⁹

The ongoing work of COSPAR since 1958 has been highlighted by two essential contributions. Its members have continued to plan and participate in much of the rocket and satellite work accomplished

³⁶ *Ibid.*, 9. Berkner supported continued international cooperation in this field because of the need to continue the operation of tracking stations in many countries "telemetry has to be done in different places; there are scientists abroad who have good ideas that should be incorporated in the experiments in rockets and satellites * * *" Berkner, *supra* note 10, at 182.

³⁷ Kaplan, *supra* note 10, at 9.

³⁸ *Soviet Space Programs*, *supra* note 10, Chapter I at 177; "Radio Frequency Control in Space Telecommunications," Senate Committee on Aeronautical and Space Sciences, 86th Cong., 2d Sess., 105 (1960). The Charter of COSPAR is printed in *Legal Problems of Space Exploration, A Symposium*, *supra* note 9, Chapter I at 1292-1296.

³⁹ 1 *COSPAR Information Bulletin* 1 (March 1960).

during IGY. However, COSPAR is not an operational activity. Second, it has encouraged a "spirit of scientific cooperation in fields closely related to space research, and * * * [has] provided a meeting place for exchange of scientific initiative from all directions."⁴⁰ It has served as a medium for the distribution of space information, including notice of projected launches by the United States, and scientific papers presented at annual forums of the organization.⁴¹ The broad scope of its work has been well summed up by Berkner. He has said that "As its charter indicates, COSPAR is not concerned with the technology of rocketry, with launchings or with launching vehicles. It is concerned with scientific experiments, on-board and ground-based, which may be conducted by means of rockets and space vehicles. In broad terms, it is concerned with pure scientific inquiry."⁴² It is noteworthy that scientists from all tracking countries, as well as the launching countries, have joined to promote the success of this scientific endeavor.

During IGY the United States satellite program was designed to launch 12 satellites.⁴³ While more than 300 research sounding rockets were launched successfully during the IGY, only eight United States launches of space vehicles proved to be successful. By comparison the Soviets successfully launched but three satellites. The United States was successful in its launch of five satellites, namely Explorer I, Vanguard I, Explorer III, Explorer IV, and Project Score. The United States also launched successfully three lunar probes, namely, Pioneer 1, 2, and 3. The successful Soviet satellite launches were Sputnik 1, 2, and 3. The perigees of these successful satellites varied from 115 statute miles to 408 statute miles. The apogees varied from 588 statute miles to 2462 statute miles.⁴⁴ All were launched in connection with reasonable scientific research goals. They were engaged in peaceful, that is, nonaggressive and beneficial uses of outer space.

As is well known, space devices comparable to those launched during the International Geophysical Year have been continually employed for comparable purposes during the years since 1958. As of

⁴⁰ Schwartz, "International Space Organizations," in Odishaw, ed., *The Challenges of Space* 246 (1962); Schwartz, *International Organizations and Space Cooperation* 32-55 (1962).

⁴¹ van de Hulst, "COSPAR and Space Co-operation," in Odishaw, ed., *supra* note 40, at 265-266; *Soviet Space Programs*, *supra* note 38, at 177-180.

⁴² Berkner, "The Continuing Space Program," *supra* note 10, at 178-177-180.

⁴³ *International Geophysical Year*, *supra* note 14, at 17 (1956).

⁴⁴ 2 *STL Space Log* 8-9 (December, 1962); 1 *COSPAR Bulletin* 3-5 (March, 1960); Van Allen, "U.S. Rocket and Satellite Program," *supra* note 10, at 158, also includes Vanguard II, launched on February 17, 1959, as a "U.S. IGY satellite."

mid-1964, it has been reported that the United States had 100 space vehicles in orbit, Canada 1, and the Soviet Union 16.⁴⁵ It should be recalled that about 150 space vehicles had been orbited successfully up to 1963, and that a considerable number of launches have failed to place a vehicle into orbit.

Official confirmation of the relationship between government and scientists in the United States during the IGY was acknowledged by President Eisenhower on October 9, 1957. After calling attention to the decision taken by space scientists in Rome in October 1954, recommending that a scientific satellite program be instituted, which decision was arrived at by them in their private, or nonpublic, capacities, the President stated:

Responsibility within the Government for scientific aspects of the program was assigned to the National Science Foundations, working in close cooperation with the United States National Committee for the International Geophysical Year. The Department of Defense was made responsible for supplying the rocketry needed to place a satellite in orbit without interfering with the top-priority ballistic missile program. In line with the recommendations of a group of United States scientists advising the Department of Defense, the satellite project was assigned to the Naval Research Laboratory as Project Vanguard.⁴⁶

The extent to which national governments supported scientific efforts during the IGY, particularly so far as outer space activities were concerned, led to some speculation in the United States and elsewhere as to the legal implications arising from the launch and use of space devices.⁴⁷ In order to establish a position for the United States, Mr. Loftus Becker, Legal Adviser to the Department of State, in testifying before the Special Senate Committee on Space and Astronautics as early as May 14, 1958, observed "The arrangements with respect to the International Geophysical Year were not made on an intergovernmental basis. They were arrangements made between scientific bodies in a private capacity. It is true that certain governments, including the Soviet Union and the United States, announced in advance that during the International Geophysical Year they intended to place objects in orbit around the earth. And it was

⁴⁵ 4 *STL Space Log* 40 (Summer, 1964), "Totals include unidentified U.S. spacecraft." *Ibid.*

⁴⁶ 37 *Department of State Bulletin* 673 (1957); *White House Press Release*, October 9, 1957.

⁴⁷ Becker, "Major Aspects of the Problem of Outer Space," 38 *id.* 965 (1958).

also stated in connection with these announcements that the purpose of these satellites would be for scientific investigation."⁴⁸

Before coming to any conclusions about the possibility that there may be customary international law governing certain uses of outer space, it will be desirable to summarize the practices and usages developed during the IGY, as well as subsequently. The IGY and IGC-59, as previously indicated, were essentially the product of scientists organized through their own private professional organizations. The latter were organized on a geographical rather than a national basis. In the United States the cooperating scientists were mobilized through the National Academy of Sciences, and in the Soviet Union the same type of organization was employed. Nonetheless, each of the cooperating national committees received substantial support of varying kinds from national governments.

A formal treaty did not result from the multiplicity of such private agreements and practical acts flowing therefrom. In commenting on the totality of the IGY experience, Haley has said:

Nevertheless, a valid binding world pact emerged from these acts of agreement and cooperation. The international pact, in written form, may be abstracted from the thousands of documents and exchanges from which the living IGY evolved. There is nothing about a single formal treaty which makes it sacrosanct or makes it even an essential source of international law. In many instances the principles set forth in the treaty itself may have been established in international law long prior to the signing of the formal document. A rule of international law does not receive its validity from its enactment into a legal instrument, much of valid international law is not so enacted; and there are rules of international law which are not valid, although enacted in such instruments. Enactments, therefore, is no objective criterion for the alleged validity of a rule of international law.⁴⁹

There can be no doubt that national governments assumed that they had an interest in the launching and transiting of satellites during the IGY. It was the government of the United States, speaking through the office of the President, which announced the participa-

⁴⁸ *Ibid.* This position was again stated on August 26, 1958 before the American Bar Association; Becker, "The Control of Space," 39 *id.* 418 (1958).

⁴⁹ Haley, "Recent Developments in Space Law and Metalaw—Work of International Groups," 24 *Harvard Law Record* 3, Special Supp. (Feb. 7, 1957); *Legal Problems of Space Exploration*, 99-100; "Law and the Age of Space," 5 *St. Louis University Law Journal* 8 (1958).

tion of "this country" in the IGY satellite program.⁵⁰ Similar announcements during the IGY were made well prior to launches by the Premier or other officials of the Soviet government. A number of public international agreements were entered into by the United States with other countries permitting the installation of tracking and other scientific equipment for the measurement of satellite orbits and to receive other scientific space data.⁵¹ Further, the United States and the Soviet Union, as launching states, abstained from discussing with subjacent states the need for transit permits for orbiting satellites both during the IGY and subsequently.⁵²

The rocket and satellite program of the IGY and IGC-59 cannot be stereotyped as either a wholly private or a wholly governmental activity. And even if it were considered as an entirely private activity, it is clear that private policy making and the private formulation of international practices may be more influential when effected by private instrumentalities than when initiated by some governments.⁵³

The impact of the IGY experience and subsequent purely national practice, including occasional joint national efforts, has been appraised variously. So far as the relationship of the IGY to the development of a customary international law of outer space is concerned, there are varying views. Relying largely on the facts of governmental publicity given in advance of launches and the absence of national protest respecting orbital missions, Roberts has observed that "the only rational conclusion is that there is an implied agreement, at least for satellites launched during the IGY, that they would be allowed to circulate freely in outer space."⁵⁴ Yeager has pointed to the existence of a community of interests during the IGY, and has concluded that the self-imposed rules flowing from this experience have a material bearing on the development of a customary law of outer space.⁵⁵

⁵⁰ "Plans for Launching of Earth-Circling Satellites," 33 *Department of State Bulletin* 218 (1955).

⁵¹ *Infra*, pp. 79-80.

⁵² Roberts, "Outer Space and National Sovereignty," 12 *Air University Quarterly Review* 60 (Spring 1960).

⁵³ Miller, "The Adequacy of International Law in Meeting the Challenge of the Present Era," 8 *Howard University Law Journal* 93 (Spring 1962) has asked: "Who would dispute that Aramco is a more significant participant in the world power process than, say, Costa Rica or Mali?" Compare, Miller, "The Corporation as a Private Government in the World Community," 46 *Virginia Law Review* 1539 (1960).

⁵⁴ Roberts, *supra* note 52, at 59.

⁵⁵ Yeager, "A Code for a New Frontier," *First Colloquium* 119 (1959).

Objection has been raised by Smirnoff to drawing conclusions about the evolution of a customary law from the IGY experience. In referring to the IGY "agreement" he has urged that such an "agreement can only partially be regarded as a juridical basis for flights in outer space or as a tacit consensus of all the nations of the world."⁵⁶ He bases this conclusion on two facts, namely, that at the time of the IGY, nations were psychologically unaware of the "imminent dangers which space flights presented to mankind."⁵⁷ This position appears to be highly unrealistic and without substance. Secondly, according to Smirnoff, "because of the legal vacuum in outer space, no one who might have wished to make a protest could find any firm and stable principles in the law upon which it could be based."⁵⁸ This conclusion has also been subject to attack and rejected.⁵⁹

The unreality of the arguments raised by Smirnoff has become apparent in recent years. The uses of outer space at the present are more extensive than at the time of his writing in 1958. Nonetheless, with this knowledge and with perhaps a broader psychological awareness of space capabilities and practices, no official public protests have been made. At present the United Nations resolutions, the Charter, and international law generally are conceded to be applicable to outer space. Still at issue, however, is the extent to which IGY and subsequent practices have contributed to a customary international law of outer space.

Kopal cites two non-American authors in support of the view that "by the resolution of the International Geophysical Conference (sic), although it was a nongovernmental action, a legal basis for the launching of satellites has been established, as the attitude of scientific organizations was supported by the agreement of Governments."⁶⁰ Since governments entered into no express agreements on launching or orbiting satellites, Kopal appears to refer to

⁵⁶ Smirnoff, "The Need for a New System of Norms for Space Law and the Danger of Conflict with the Terms of the Chicago Convention," *ibid.* at 106 (1959).

⁵⁷ *Ibid.*

⁵⁸ *Ibid.*

⁵⁹ Kopal, "Two Problems of Outer Space Control," *Third Colloquium* 111, and footnote 9 at 112 (1961).

⁶⁰ *Ibid.*, 110. He makes reference to Korovin's article "International Status of Cosmic Space," 5 *International Affairs* (Moscow) 53-59 (January 1959), *Legal Problems of Space Exploration*, *supra* note 9, Chapter I at 1062, and to the book of the Czechoslovak author, Outrata, *International Law* 228 (1960). He also cites Becker, *supra* note 47. Becker's position is much narrower than the one advanced by Kopal. Compare, *infra*, pp. 142-143.

the practices which developed during the IGY period. Kopal stated further "The agreement on the IGY undoubtedly represents from the point of view of International Law an important element in the establishment of the legal regime of outer space."⁶¹ He supports this conclusion on the ground that "there does not exist any legal norm forbidding the flights into outer space and in it for peaceful purposes."⁶² This reason is consonant with the broader principles of international law set forth in the *Lotus* case.⁶³ Under its rationale international law does not in fact provide specific coverage of the totality of international relations to the extent that international law prohibits only such conduct as in fact is forbidden. This simply means that until the principles and rules of international law interdict certain acts that such acts may be engaged in. Since international law does not interdict the peaceful uses of outer space, it is clear that it may be used for such purposes. Because of this overriding approach to an understanding of the principles of international law, it is at least possible to agree with the conclusion reached by Kopal as expressed in these words: "Outer space * * * is and should remain freely accessible under equal conditions to peaceful research and exploitation by all countries."⁶⁴ Exploitation, of course, does not mean appropriation. Appropriation was specifically prohibited by paragraph 1.(b) of the terms of General Assembly Resolution 1721 (XVI).⁶⁵ Exploitation means the peaceful use of outer space for beneficial scientific and commercial purposes.

Becker, writing during the IGY, noted the limited purposes of the satellite program, namely, that satellites would be used for "scientific investigation."⁶⁶ Observing that no nation had protested the announcements of the United States and the Soviet Union respecting the orbiting of satellites, he sought to clarify a misconception with respect to the rights of the United States. He stated that he had seen it stated several times that the United States does "not have any right to protest or take any action with respect to satellites because

⁶¹ *Ibid.*, 110.

⁶² *Ibid.*

⁶³ The S.S. "*Lotus*" (France v. Turkey), *P.C.I.J. Ser. A*, No. 10 (1927); 2 Hudson, *World Court Reports* 20 (1935).

⁶⁴ Kopal, *supra* note 59, at 110. This conclusion of course, is almost identical with Par. 1. of the statement of principles adopted by the General Assembly of the United Nations on December 20, 1961, 1721 (XVI). Annex 2, *infra*, pp. 443-446.

⁶⁵ Annex 2, *infra*, pp. 443-446.

⁶⁶ Becker, *supra* note 47, at 965.

of the events relating to the International Geophysical Year."⁶⁷ He then indicated:

It follows, therefore, that the only conclusion that can be reached with respect to the arrangements regarding the International Geophysical Year is that there is an implied agreement that, for the period of the International Geophysical Year, it is permissible to put into orbit satellites designed for scientific purposes. Once the year is over, rights in this field will have to be determined by whatever agreement may be reached with respect to such objects.⁶⁸

After making reference to national air space rights contained in the Chicago Convention of 1944, and after making a comparison with the development of rights in the Antarctic, he stated "So, too, in outer space the United States has already engaged in activities which, it could be asserted, have given to it certain rights as distinguished from those states who have not engaged in such activities. Up to this time the United States has made no claims of sovereignty based upon such activities."⁶⁹

From these observations it will be seen that the legal adviser to the Department of State acknowledged the presence of a process whereby international rights were being established. With the continuation of the IGY through the IGC and subsequent practices, IGY activities were enlarged and new and extended space programs came into being. However, the space programs continued to demonstrate a primary and fundamental interest in peaceful and scientific matters.

Despite the presence of space devices in areas superjacent to nation-states, there have been no reported instances of official or equivalent public protests concerning the launching or the transiting of such spacecraft and space vehicles. This fact has been commented on by a very large number of the writers who have discussed space subjects since 1958.⁷⁰ In 1961 and again in 1962, John A. Johnson, General Counsel for NASA, referred to the fact that no official protests

⁶⁷ *Ibid.*

⁶⁸ *Ibid.*

⁶⁹ *Ibid.*, 966.

⁷⁰ John Cobb Cooper, "Flight-Space and the Satellites," 7 *International and Comparative Law Quarterly* 82, 87 (1958). Feldman, "An American View of Jurisdiction in Outer Space," *First Colloquium* 47-48 (1959). Gatland, "Contribution," *ibid.*, 63. Gorove, "On the Threshold of Space," *ibid.*, 74. Smirnoff, "The Need for a New System of Norms for Space Law and Danger of Conflict with the Terms of the Chicago Convention," *ibid.*, 106 (1959). Haley, "The Rule of Law in the Space Age," 37 *Foreign Policy Bulletin* 190 (1958). *Legal Problems of Space Exploration*, *supra* note 9, Chapter I, 579. Cheng, "Problems of Space Law," *Legal Problems of Space Exploration*, *ibid.*, 668. Gatland, "Sur-

had been made concerning the launching or orbiting of satellites.⁷¹ Among others this was also noted by Deputy Assistant Secretary of State Gardner,⁷² and in 1963 by McDougal.⁷³

No official protests have been filed by governments respecting the practice developed during the IGY, and followed every year thereafter, of placing space satellites in orbit. In marked contrast has been the extensive diplomatic objection to overflights by conventional aircraft and balloons. Force has been employed to prevent the overflight of U-2 type aircraft.⁷⁴

Some writers have concluded from the fact that there have been no official protests resulting from the orbiting of satellites that there has been a tacit acceptance by states of the legal right for such space vehicles to be in orbit.⁷⁵ A key issue to be resolved is whether official tacit consent exists and, if so, what the legal consequences of known practice may be. This practice includes the orbiting of unmanned craft during the IGY and the subsequent transiting of manned craft. It covers vehicles used for a large variety of purposes, all of which have been employed for peaceful, that is, nonaggressive and beneficial purposes.

veillance from Orbit," *ibid.*, 671. Bastid, *Cours de Droit International Approfondi* 574 (1958). Lall, "Space Exploration—Some Legal and Political Aspects," *Second Colloquium*, 89 (1960). Vallardo, "The Law of Interplanetary Space," *ibid.*, 159. Herter, "News Conference of April 8, 1960," 42 *Department of State Bulletin* 643 (1960). Kopal, "Two Problems of Outer Space Control," *Third Colloquium*, 110 (1961). Martin, "International Space Law and Outer Space," *ibid.*, 105 (1961). Leopold, "Cosmic Surveillance by Space Flight Momentum," 6 *Wayne Law Review* 329–330 (1960). Lipson, "Some Problems of the Near Future and Possible Approaches," in Goldsen, ed., *International Political Implications of Activities in Outer Space* 82 (1960). Roberts, *supra* note 52, at 59.

⁷¹ Johnson, 55 *Proceedings of the American Society of International Law* 167 (1961); "The Future of Manned Space Flight and the 'Freedom' of Outer Space," *NASA News Release* 6 (August 4, 1962).

⁷² Gardner, "Law of Outer Space," 56 *A.J.I.L.* 798 (1962); *Department of State Press Release No. 159*, (March 10, 1962).

⁷³ McDougal, Comments at Conference on "Specific and Urgent Problems in the Law of Outer Space," Montreal, April 13, 1963, in Cohen, ed., *Law and Politics in Space* (1964) at p. 105.

⁷⁴ Lissitzyn, "Some Legal Implications of the U-2 and RB-47 Incidents," 57 *A.J.I.L.* 135 (1962); Lissitzyn, "The Treatment of Aerial Intruders in Recent Practice and International Law," 47 *A.J.I.L.* 559 (1953). See Cheng, "International Law and High Altitude Flights: Balloons, Rockets and Man-Made Satellites," *Legal Problems of Space Exploration*, *supra* note 10, Chapter I, 141; Roberts, *supra* note 52, at 58–59; Bloomfield "The Prospects for Law and Order," in Bloomfield, ed., *supra* note 22, at 172 (1962).

⁷⁵ Rivoire, "How to Introduce the Law into Space," *Second Colloquium*, 129 (1960); Rauchhaupt, "World Space Law," *ibid.*, 125.

In addition to the problem of the orbiting of artificial satellites, at heights and for the purposes presently employed, there is also the legal problem of the passage of such craft through traditional airspace while en route to and from the orbital altitudes. This raises the question, among others, of a right of innocent passage by satellites while possibly making a descent through the airspace of the non-launching state.

The United Nations, through its reports and resolutions, to say nothing of its being a forum for the presentation of national points of view, has focused attention on the absence of official objection to orbital activity and to the concept of tacit consent. The first significant international analysis of the legality of space activity adopted the language of "permissibility" for the launching and orbiting of space vehicles. The report is noteworthy because of the early recognition of such rights.

Pursuant to Resolution 1348 (XIII),⁷⁶ December 13, 1958, the General Assembly created an *Ad Hoc* Committee on the Peaceful Uses of Outer Space. The Committee concluded its work on June 25, 1959, and filed an extensive report on July 14, 1959.⁷⁷ Pursuant to the above Resolution, paragraph 1 (d), the Committee was told to report on "The nature of legal problems which may arise in the carrying out of programmes to explore outer space."⁷⁸ In connection with the question of the freedom of outer space for exploration and use, the report stated:

9. During the IGY 1957-1958 and subsequently, countries throughout the world proceeded on the premise of the permissibility of the launching and flight of space vehicles which were launched, regardless of what territory they passed 'over' during the course of their flight through outer space. The Committee, bearing in mind that its terms of reference refer exclusively to the peaceful uses of outer space, believes that, with this practice, there may have been initiated the recognition or establishment of a generally accepted rule to the effect that, in principle, outer space is, on conditions of equality, freely available for exploration and use by all in accordance with existing or future international law or agreements.⁷⁹

⁷⁶ *Documents on Disarmament*, 1945-59, Vol. II, 1305. Annex 7.

⁷⁷ U.N. Doc. A/4141; *Legal Problems of Space Exploration*, *supra* note 10, Chapter I at 1246. Annex 20, *infra* at 472. (Partial only)

⁷⁸ *Ibid.*, 1.

⁷⁹ *Ibid.*, 23.

The *Ad Hoc* Committee's report was discussed by the First Committee of the General Assembly on December 11 and 12, 1959.⁸⁰ Ambassador Lodge gave full endorsement to the report. He singled out the paragraph quoted above and stated that "his delegation supported the view expressed in * * * [it, and] that it was becoming a generally accepted principle that outer space was freely available for exploration and use by all, on an equal basis, in accordance with existing international law or agreements."⁸¹ General approval of the report of the *Ad Hoc* Committee was voiced by representatives from Sweden, Argentina, Cuba, the United Kingdom, Japan, Canada, and China.⁸²

International lawyers soon commented on the development of a rule of international law looking toward the permissibility of peaceful uses of outer space. Binet stated in 1959, after referring to the above quoted paragraph, that the Committee report "may be considered as the first official pronouncement on at least one aspect of the principle of freedom of outer space."⁸³ Machowski has concluded that "In view of recent developments [1959], the permissibility of launching unmanned space vehicles cannot be objected to."⁸⁴ Kucherov in analyzing the 1958 views of the Soviet writer, Galina, has stated that Galina has "argued that since there is no international law covering the outer space, any government may indefinitely launch rockets or satellites into interplanetary space without asking permission of any other government."⁸⁵ In referring to the previously quoted paragraph, Senator Thomas E. Martin has described the work of the Committee as "liberal and forward looking * * *" and has declared that "This premise appears to have been supported by the fact that such space activity has been undertaken and that no

⁸⁰ U.N. Doc. A/C.1/SR.1079 and A/C.1/SR.1080.

⁸¹ *Ibid.*, 279.

⁸² *Ibid.*, 281-291.

⁸³ Binet, "Toward Solving the Space Sovereignty Problem," *Second Colloquium*, 12 (1960).

⁸⁴ Machowski, "The Legal Status of Unmanned Space Vehicles," *Second Colloquium* 117 (1960).

⁸⁵ Kucherov, "Legal Problems of Outer Space, U.S.A. and Soviet Viewpoints," *Second Colloquium*, 67-68 (1960). Kopal has provided the following translation of Galina: "The non-existence of international legal norms gives reason for the affirmation that any state can freely use the interplanetary space and launch there its satellites and rockets, without asking other states for a permission." Kopal, "Two Problems of Outer Space Control," *Third Colloquium*, 110 (1961). It should be noted that Korovin, whose writings are said to enjoy a higher authenticity than those of Galina, rejects the view that international law is not applicable in space, and supports the permissibility of the use of outer space for peaceful purposes. Kucherov, *supra* at 68.

nation has raised objection to the launching of space vehicles by another. Thus it would seem to me there has been acceptance of the principle of freedom of exploration and scientific observation in much the same manner as was agreed in Washington last December 1 [1959] with respect to the continent of Antarctica.”⁸⁶

On the basis of all of the facts resulting from the total space experience to date, it is now possible to reach some legal conclusions. In such an analysis the basic problem is to interpret in legal terms the quality of legal permissibility resulting from the absence of protest, or tacit consent to, respecting the launching and the orbiting of the type of spacecraft and vehicles actually placed in orbit. Has the clearly established practice been transformed into a customary rule of international law? The author believes that a rule of customary international law now exists making it permissible for satellites and other space instrumentalities to be used for peaceful, i.e., nonaggressive and beneficial purposes, and that so long as such devices are engaged in such uses that no state may validly object to their employment. It is further believed that future commentators will agree with this judgment, and that ongoing practices will support this conclusion.

Support of this conclusion will also depend upon an adequate appraisal of the characteristics and nature of customary international law. A brief analysis of the significant indicia of customary international law follows.

b. *The Uniformity of Expectations*

The importance of custom as a source of international law was recognized by Grotius. In the *Prolegomena*, he refers to the law of nations as being founded on custom and the testimony of those who are skilled in it.⁸⁷ Other factors which must be weighed in determining the existence of a customary law of outer space include: how it is created, its impact on conduct, the extent of its duration, the repetitive aspects of the practice, the nature of those who engage in the significant practices, the extent to which the practices are accepted,

⁸⁶ Martin, “International Space Law and Outer Space,” *Third Colloquium*, 105 (1961). Compare Galloway, “The United Nations Ad Hoc Committee on the Peaceful Uses of Outer Space,” *Second Colloquium*, 38, 40 (1960). See Johnson, “Scientific Organizations and the Development of International Law,” 54 *Proceedings of the American Society of International Law* 206 (1960).

⁸⁷ Grotius, *The Laws of War and Peace, Prolegomena*, 23 (1625). (Classics of International Law, 1925). Custom was equated to tacit agreement by Grotius. He wrote, “When many at different times, and in different places, affirm the same thing as certain, that ought to be referred to a universal cause * * *” drawn either from the principles of nature or common consent.

the relationship between custom and new states, the problem of resource states, vagaries of interpretation, and resistance to customary rules.

What is custom and how is it created? Custom, as law, requires conformity to a given course of conduct. It depends upon the acceptance by states that certain practices are legally binding, "*opinio juris*," and that there is a duty to conform. It derives from past international conduct during which an adequate consensus has been reached respecting acceptable behavior.

Past conduct is relevant to customary international law since it assists in clarifying expectations for standardized future behavior. Conduct is not only a course of action but is also a claim that certain modes of behavior correspond with current community benefits and values. Claims are presented to the world community, based on the expectation of reciprocity, and when validated by the decision makers in the world community, become effective legal rules.

It is the function of the community to determine the validity of claims. Therefore, the community accepts claims which accord with its needs and values, even though the claims may be advanced by but a single nation or other legal personality. In this connection it has been pointed out that "It is not of course the unilateral claims but rather the reciprocal tolerances of the external decision-makers which create the expectations of pattern and uniformity in decision, of practice in accord with rule, commonly regarded as law."⁸⁸

Custom, being the product of common consent, is observable in the form of practice, usage, and positive acts. The actors, of course, must be equipped with the capability to engage in the specific conduct which is custom building. Thus, in outer space, custom is first of all the product of the conduct of what I shall call resource states, namely, those possessing the capabilities of putting into orbit, and maintaining in orbit, space vehicles.⁸⁹ However, since space vehicles use a dimension which is not suited to the occupation or complete control of the resource states, and since space activities are earth and man oriented, it can be stated that the nonresource states have a valid interest in space activities and may be entitled to be consulted

⁸⁸ McDougal, "The Hydrogen Bomb Tests and the International Law of the Sea," 49 *A.J.I.L.* 358, footnote 7 (1955).

⁸⁹ Compare Marshall, C. J., *The Antelope*, 10 Wheat 66 (1825). He based his conclusions on the practices of only those states "who possess distant colonies * * *" These states at that time sanctioned the slave trade, and it was only to the practices of a limited number of states that Marshall turned to ascertain if a customary rule of law existed.

in connection with the use by space vehicles of this environment.⁹⁰ Their conduct, like that of the resource states, is an essential factor in the development of a customary law of outer space.⁹¹

The nonresource states have contributed to the development of a customary rule of law permitting the peaceful uses of outer space by their tacit consent to the orbiting of space vehicles. The fact that such states have not officially protested the pattern of conduct of the resource nations constitutes a silent acknowledgment of the development of a customary rule of international law. The legal equivalence of tacit consent and tacit agreement was accepted by Vattel in *Le Droit des Gens*.⁹² Through the tacit acceptance on the part of nonresource states of the conduct of resource states, they have helped in the creation of the customary rule of peaceful, that is nonaggressive and beneficial, uses of outer space.

The validity of this conclusion must be tested against the other considerations mentioned above. It is generally agreed that a customary rule of law depends upon the existence of a continuous situation. The essential practice, usage, positive acts, and tacit consent or agreement, as measured by lack of protest, must meet the test of minimum duration.

The time span of minimum duration for space vehicles must take into account the tempo of modern times, and this is not uninfluenced by the speeds achieved and achievable by satellites which can now orbit the earth in approximately one hour. There is a general consensus that customary rules of international law may develop over quite short periods of time. It is also agreed generally that the recognition of the existence of a rule is more important than the mere lapse of time.

The traditional view has been stated by Hackworth. He has written "Customary, as distinguished from conventional, international law is based upon the common consent of nations extending over a period of time of sufficient duration to cause it to become crystallized into a rule of conduct."⁹³ Several writers have noted that in fact customary law has in the past developed "slowly"⁹⁴ or "after a long

⁹⁰ The concerns of nonresource states for legal principles and rules for outer space activities have often been voiced at the United Nations. *U.N. Doc. A/C1.PV 1296*, 33-35.

⁹¹ Jenks, "The International Control of Outer Space," *Third Colloquium* 6 (1961).

⁹² Vattel, *Le Droit des Gens* (1758); quoted by Bishop, *International Law* 19 (2nd ed. 1962).

⁹³ I Hackworth, *Digest of International Law* 1 (1940).

⁹⁴ Jacobini, *International Law* 4 (1962).

historical process."⁹⁵ They, as well as others, point out, however, that customary international law has solidified quickly in some circumstances. Customary international law developed slowly with respect to diplomatic privileges and immunities and the right of coastal fishing ships to be immune from capture during hostilities.⁹⁶ Moore suggested that the passage of 100 years in the instance of coastal fishing ships was "amply sufficient to have enabled what originally may have rested in custom or comity, courtesy or concession, to grow, by the general assent of civilized nations, into a settled rule of international law."⁹⁷ In the area of private law, it has also been accepted that the Law Merchant evolved slowly from practice to customary law.

On the other hand, where simultaneous interests based upon mutual advantage have existed, practice has evolved very quickly into a rule of international law. This has been seen in the area of maritime rules of the road,⁹⁸ international air law,⁹⁹ the continental shelf,¹⁰⁰ exemptions from local jurisdiction of armed forces authorized to cross national boundaries, and where practice has been approved by the resolution of an international organization.¹⁰¹

Kunz also has observed that the length of time during which a practice is followed is not determinative of the existence of a customary rule of international law.¹⁰² Tunkin agrees with Kunz that it is not juridically necessary for a "customary rule to be 'old' or of long

⁹⁵ Starke, *An Introduction to International Law* 32 (3d ed. 1954). Dickinson has suggested that customary international law "grows glacially." *Law and Peace* 117 (1951). A German court in *Lübeck v. Mecklenburg-Schwerin* stated "If, as is generally recognized, no general rules can be drawn up as to the number of customary acts and their duration, one single case of usage does not suffice as a rule." The Court added that Triepel's comment to the effect that "under certain conditions one single act of international practice based on usage may suffice for a conclusion as to the existence of a rule of international law to be ventured" did not suggest that a single case of usage would normally constitute the basis for a customary rule of law. I (2) *Zeitschrift für Ausländisches Öffentliches Recht und Völkerrecht* 180, 183-186 (1929); translated in I Hackworth, *Digest of International Law* 15-16 (1940).

⁹⁶ *The Paquete Habana*, 175 U.S. 677 (1900).

⁹⁷ I Moore, *A Digest of International Law* 7 (1906).

⁹⁸ *The Scotia*, 14 Wallace 170, 188 (1871).

⁹⁹ Jacobini, *supra* note 94, at 4.

¹⁰⁰ Young, "Sedentary Fisheries and the Convention of the Continental Shelf," 55 *A.J.I.L.* 369 (1961); Josef L. Kunz, "Continental Shelf and International Law: Confusion and Abuse," 50 *A.J.I.L.* 823 (1956); Jacobini, *supra* note 94, at 4.

¹⁰¹ Starke, *supra* note 95, at 35, footnote 3.

¹⁰² Kunz, "The Nature of Customary International Law," 47 *A.J.I.L.* 666 (1953).

standing,"¹⁰³ and then stated "Although in fact time plays a big part in the process of formation of a customary norm of international law, juridically the element of time cannot in itself have a decisive significance. Depending on circumstances, a customary norm may take a long time to develop but may also be formed in a short period of time."¹⁰⁴

In support of the practical needs of the world community, Wilson has rejected specific limitations upon the factor of duration. He has written that "If for a time international intercourse follows certain methods, these methods are regarded as binding in later intercourse, and departure from this procedure is held a violation of international right."¹⁰⁵ The well known analogy between the formation of a path across a common and customary international law is particularly appropriate to practice, usage, and positive acts in space. In pointing to the fact that usage develops into custom, Pitt Cobbett wrote:

At first each wayfarer pursues his own course; gradually, by reason either of its directness or on some other ground of apparent utility, some particular route is followed by the majority; this route next assumes the character of a track, discernible but not as yet well defined, from which deviation, however, now becomes rare; whilst in its final stage the route assumes the shape of a well-defined path, habitually followed by all who pass that way.¹⁰⁶

The illustration provided by Cobbett suggests that custom results from repetitive acts carried on at presumably rather frequent intervals. Although repetitive conduct provides notice to the world of a practical state of affairs, it is far from clear that either highly repetitive conduct or such conduct over an extended period of time is required for the development of customary rules of international law. As has been previously suggested there is a body of opinion—

¹⁰³ Tunkin, "Remarks On the Juridical Nature of Customary Norms of International Law," 49 *California Law Review* 419 (1961). Compare, Krylov, "Les notions principales du droit des gens," 70 *Recueil des Cours* 441-443 (1947).

¹⁰⁴ *Ibid.* He cites in support of this conclusion Verdross, *Völkerrecht* 85 (4th ed. 1959). Kunz has characterized other parts of Tunkin's article as a "defense of the obsolete and fictitious construction of international customary law as *pactum tacitum*, a construction so dear to nationalistic writers, some time ago * * *" Kunz, "The Changing Science of International Law," 56 *A.J.I.L.* 498, footnote 34 (1962).

¹⁰⁵ Wilson and Tucker, *International Law* 39 (8th ed., 1922).

¹⁰⁶ Cobbett, *Cases and Opinions on International Law*, 5-6 (3d ed., 1909).

certainly not predominant—that custom must be the product of slow and repetitive conduct, well admixed with extended and complacent meditation.

This myth has been invalidated by Fenwick who has pointed to the need to examine different types of conduct in different situations before forming judgments on the subject. In contrasting the development of rules during occasional periods of maritime warfare with frequent, if not daily, commercial activities, he has indicated the way in which customary law is developed. He has written:

Many of these rules, such as those relating to maritime warfare, had their origin in the practice of a single state which was able to impose its will until the rule came to be accepted by other states without protest.

Other rules, notably those relating to commerce, had their origin in the voluntary practice of a small group of states, and being found useful and convenient, were gradually accepted by other states until the established practice became a binding rule.¹⁰⁷

The practice of orbiting space vehicles has been both continuous and uninterrupted since 1957. In view of these facts, it is noteworthy that Tunkin has observed that "Some authors are of the view that only continuity of international practice can lead to the establishment of a customary norm of international law. This is not so, however. It would be more correct to say that not one norm of international law has appeared as a result of international practice that had no interruption."¹⁰⁸ Tunkin qualified this conclusion somewhat by adding that discontinuity might—depending on the character of the modification of practice—affect the creation of customary international law. In last analysis, however, in his view, neither the element of time nor the factor of continuous conduct play "a decisive role"¹⁰⁹ in the development of customary international law.

The number of states engaging in a common practice also conditions the development of customary international law. It is not correct to pass judgment upon the development of a customary interna-

¹⁰⁷ Fenwick, *International Law* 72 (3d ed., 1948). The influence of a single state, England, in the development of certain customary sea law rules is well known. *The Scotia*, 14 Wallace 170, 188 (1871). For a recent interpretation of the holding in the case of *The Scotia*, see Goldie, "Special Regimes and Preemptive Activities in International Law," 11 *Int'l & Comp. L. Q.* 681-683 (1962).

¹⁰⁸ Tunkin, *supra* note 103, at 420.

¹⁰⁹ *Ibid.*, 421.

tional law for space based on the fact that there are but two major space states. While it is true that the United States and the Soviet Union possess advanced space technology and have engaged in successful space launches frequently since 1957, there are other factors to be taken into account. As has been pointed out, the United States has joined in launches with other countries.¹¹⁰ Agreements have been entered into among European states for launching projects.¹¹¹ International agreements between the United States and many states permit such collateral and necessary activities as monitoring, data accumulation, and dissemination within such states.¹¹² The United States has made many offers of scientific cooperation with other states for cooperation in space activities. Many of such offers have been accepted and practical programs have been placed in operation. Further, the policies respecting the peaceful uses of outer space have been put forward by the launching states and have been based on the belief that such policies were to the advantage not only of the states having an advanced space technology but also beneficial for all states. The determination of international space policy has been the product of the community of states—not just those possessing advanced launching and orbiting capabilities.

It is true, nonetheless, that at the present there are but two launching states which are well equipped with substantial space capabilities. These are the space resource states, and it is necessary to examine their unique contributions to the development of a customary international law of outer space. Do their claims—in the form of demands presented to the world community—have a special quality, and do their practices largely condition the customary law of space? It is clear in the formulation of custom that claims of a unilateral character are advanced, and further, that decisions as to whether such claims will be recognized as custom depend not only upon the views of such states, but also upon the views of nonresource or non-claimant states.

The role of resource states has been described for the law of the sea by Colombos. He has asserted that "Custom is the most important source of the international law of the sea and the usages of the

¹¹⁰ See *supra*, pp. 78, 99. The United States has invited nations of the world "in advance of each launching of its meteorological satellites * * * to co-ordinate weather observations of their own with data obtained through simultaneous passes of the [United States] satellites above their skies." U.N. Doc. A/AC.105/PV, 18 (1962). By March, 1962, some thirty states had participated in such activities as a result of the invitations.

¹¹¹ *Supra*, pp. 17, 81-84.

¹¹² *Infra*, pp. 78-80.

great maritime States must therefore always exercise a weighty influence on its development. There is good justification for such a claim on the ground that the Powers most concerned with a subject are able to understand it best.”¹¹³ It is only common sense to conclude that the resource states must initially establish usages and practices, and may establish customary procedures for themselves. The role of other states, although important, is initially subsidiary. While the claims of other states “may be of importance in the recognition of the genesis of a right * * *,” such claims “cannot in themselves alone establish international customary law.”¹¹⁴

While “common consent is the basis of all law,”¹¹⁵ and while custom is “that line of conduct which the society has consented to regard as obligatory,”¹¹⁶ customary law is the ultimate product of the initial claims of resource states as determined to be binding by the world community. Thus, while unilateral acts may be required to start the process of customary law on its way, and may even thereby perhaps “create legally binding effects in international law,”¹¹⁷ it is through the processes of mutual accommodation or “mutual toleration”¹¹⁸ based on the expectation of reciprocity that the true consensus of agreement is arrived at.

Many sources must be considered in determining whether the accumulation of mutual tolerances in the area of outer space has in fact produced a customary international law of peaceful, that is, nonaggressive and beneficial uses of outer space. These include: the statements of publicists who have examined the facts of space activity in a legal context; records of diplomatic instructions and negotiations; statements of diplomats who have participated in the formulation of legal rules; judicial acknowledgment based on evidentiary attestation; international resolutions taken by international organizations; practices of international organizations, including both private and public bodies; municipal laws, treaties; and, of utmost importance, the actual existence of observable common conduct so broadly respected as to eliminate doubts as to its existence and as to the duty to

¹¹³ Colombos, *The International Law of the Sea* 7 (4th ed. 1959).

¹¹⁴ Lübeck v. Mecklenburg-Schwerin, I (2) *Zeitschrift für Ausländisches Öffentliches Recht und Völkerrecht* 180, 183–186 (1929), translation in I Hackworth, *supra* note 93, at 16.

¹¹⁵ I Lauterpacht-Oppenheim, *International Law* 15 (8th ed. 1955).

¹¹⁶ I Westlake, *International Law* 14 (2nd ed. 1910).

¹¹⁷ Abi-Saab, “The General Principles of Law Recognized by Civilized Nations,” 8 *Howard University Law Journal* 109 (1962).

¹¹⁸ McDougal, “Perspectives for a Law of Outer Space,” 52 *A.J.I.L.* 430 (1958).

conform. The claims which take these forms "create expectations that effective power will be restrained and exercised in certain uniformities of pattern."¹¹⁹ Chief Justice Marshall, in deciding a case dealing with practical experiences of resource nations, concluded that "The modern usage of nations" may become law and that which is an established rule or practice is the basis for such law.¹²⁰

It bears emphasizing that the pattern of conduct which leads to customary international law may be the conduct of different legal persons. Thus, in principle it may be the conduct of states, or of international organizations both public and private, and of individuals acting either personally or collectively. In the launching and orbiting of space vehicles, the conduct has been that of states, both individually and collectively, and of individuals—with the support of states, both individually and collectively. Examples of the latter include corporate or group activities by such organizations as the American Telephone and Telegraph Company, and the different private scientific groups during and after the International Geophysical Year.

Maritime customs have been created by individual mariners. The Law Merchant was the product of individual traders. Early communications practices and usages of commercial companies were readily adopted by national governments because of the inherent practicability of their activities.¹²¹ Usages perfected by private entities have been sponsored and carried forward by governments. Changes by both the private entities and by governments have led to suitable practices, and these have provided the pattern for the development of customary law.¹²² This has been equally true for space vehicles.

¹¹⁹ McDougal, *supra* note 88, at 356. Compare, Kunz, *supra* note 102, at 667; I. Hyde, *International Law Chiefly as Interpreted and Applied by the United States* 11 (2nd rev. ed. 1945); Kopelmanas, "Custom as a Means of the Creation of International Law," *Brit. Yb. Int'l L.* 127 (1937); Gianni, *La Coutume en droit international* (1931).

¹²⁰ *United States v. Percheman*, 7 Peters 51, 87 (1833); Compare Finch, *Les sources modernes du droit international*, 53 *Recueil des Cours* 581 et seq. (1935); Jaffe, "Reliance Upon Custom and General Principles in the Growth of Space Law," *Military Law Review*, Department of the Army Pamphlet 27-100-20, 167 (April 1963). In this article Jaffe has sought to repudiate earlier views contained in his "International Law and Space Exploration," 6 *St. Louis University Law Journal* 68-69 (1960).

¹²¹ DeWolf, "Telecommunications in the New World," 55 *Yale Law Journal* 1281 (1946). Glazer, "The Law-Making Treaties of the International Telecommunication Union Through Time and in Space," 60 *Michigan Law Review* 269 (1962).

¹²² Cobbett, *supra* note 106, at 6.

Practices similar to those conducted during the IGY have been continued under governmental management. Modifications of private practices have been initiated. Old and ongoing private practices have merged with governmental practices. The latter have been creative and extensive. The resultant blend of private-public practices has fallen more and more under the management and control of governments, so that what was initiated as a private scientific effort has become a full-fledged government concern with a very large part of planning, management, and operations now falling within the domain of governments.

A substantial product of this transitional situation has been for practices—both early and late—to constitute customary legal claims. Through practice and usage, meeting the requirements set out herein, a customary rule of international law permitting the launching and orbiting of space vehicles of known and future types for peaceful, that is nonaggressive and beneficial purposes, has been established.

This conclusion is based on the premise that resource states and interested nonresource states have given their approval to this view, and that this view has come “to command a general assent * * *”.¹²³

This raises the question of whether general assent or something more or less than such assent is required to establish a rule of customary international law. Western authorities are of the opinion that general assent is all that is required to demonstrate the existence of a customary rule of international law.¹²⁴ Kunz holds that general assent, as demonstrated by general practice, rather than unanimous or universal practice, proves the existence of a valid rule of customary international law.¹²⁵ But, he also has concluded that “a mere majority of states is not enough.”¹²⁶ Quadri has taken into account the qualitative condition of states in terms of the totality of power at their disposition in arriving at the conclusion that the political effectiveness of states, as brought to bear on usage and practice, largely affects the existence of customary rules of international law. States possessing a preponderance of force, that is, having the “will, decision, and action common to a definite group capable, if necessary, of imposing

¹²³ *Ibid.*

¹²⁴ Kelsen, *Principles of International Law* 313 (1952); 1 Guggenheim, *Traité de Droit International Public* 49 (1953); Morelli, *Nozioni de Diritto Internazionale* par. 19 (3d ed., 1951); Basdevant, *Règles générales du droit de la paix*, 58 *Recueil des Cours* 509 (1936); Sierra, *Tratado de Derecho Internacional Publico* 25 (2d ed. 1955).

¹²⁵ Kunz, *supra* note 102, at 666.

¹²⁶ *Ibid.*

its power * * * " are capable of maintaining valid customary legal rules.¹²⁷

The Soviet writer, Tunkin, has distinguished between factual and juridical considerations as respects the development of customary international law. While acknowledging that the position of the "Great Powers in the first place, is of decisive significance in the creation of generally accepted norms of international law * * *"¹²⁸ he has also indicated that from a juridical point of view "the wills of the different states in the process of creation of norms of international law are equivalent to each other."¹²⁹ He then argues against the universality of application of customary legal rules arrived at only by a preponderance of resource states. It is his contention that customary norms of international law "being a result of agreement among states, the sphere of action of such norms is limited to the relations between the states which accepted these norms as norms of international law, i.e., the states participating in this tacit agreement."¹³⁰ His conclusion is entirely too narrow, and fails to take into account the fact that customary international law has always been a formidable and valuable device to bind a state even against its will in some situations. His argument suggests that general customary international law or universal customary international law can only be the product of either general or universal consent of nations.

A quantitative vote built on Tunkin's vastly oversimplified premises would destroy the utility of customary international law and stagnate the totality of international law. Both practical necessity and moral responsibility require only that international customary law be practiced and accepted by resource states generally and not universally. It is always subject to the community test of reasonableness. So far as the peaceful, i.e., nonaggressive and beneficial, use of outer space is concerned, the resource states constitute the select

¹²⁷ Quadri, *Le fondement du caractere obligatoire du droit international public* 80 *Recueil des Cours* 583, 625 (1952). Compare Quadri, *Droit international cosmique*, 98 *Recueil des Cours* 524-539 (1959).

¹²⁸ Tunkin, *supra* note 103, at 427; Korovin has stated that for space law this must be "the U.S.S.R. and the U.S.A.—those most concerned with the problems." *Conquest of Outer Space* 94 (1959). Quoted in *Soviet Space Programs*, *supra* note 10, Chapter I, at 217. However, in 1960 the Soviet writer, Zhukov, stated that the United Nations "must take the necessary measures to ensure that the conquest of outer space serves only peaceful purposes." Zhukov, "The U.N. and the Peaceful Use of Outer Space," 1960 *Soviet Year-Book of International Law* 186 (1961). Compare Zhukov, "Practical Problems of Space Law," *International Affairs* (Moscow) 27-30 (May 1963).

¹²⁹ *Ibid.*

¹³⁰ *Ibid.*, 428.

forum in which the rules are created and implemented. It is, nonetheless, important to note that through the resolutions of the United Nations General Assembly, a vast majority of the world's states, and all of the members of the UN, have subscribed to the principle of the peaceful uses of outer space.

The emerging customary rules of international law applicable to outer space apply with equal force to all members of the world community. The customary rule of peaceful, i.e., nonaggressive and beneficial, uses of outer space has come into being simultaneously with the death of empires and with the creation and proliferation of new states. Since they by their conduct have accepted this rule, the fact that some of these states have made unspecific criticisms of the role of customary international law in effect at the moment of their being accepted into the world community is lacking in significance. It should, perhaps, be noted in passing that several countries, particularly the Soviet Union and some of the new nation-states which have not yet overcome the forces of excessive nationalism, have urged that the only true source of international law is the express or written agreement. From this unacceptable premise all kinds of weird conclusions have been drawn, including the false concept that new states are not accountable to customary law created prior to their existence and that practices must be accepted universally before customary rules of international law can exist.

Tunkin has set forth the Soviet viewpoint that customary international law is subject to "reservations" on the part of new states which "have the juridical right not to recognize this or that customary norm of international law."¹³¹ From this he has argued that "agreement between states lies at the basis of the process by which customary norms of international law are created." This condition is attributed by him to the existence of states based on different and opposed social systems. On these grounds he has concluded that it is not possible to create "norms of law binding upon the states of both systems, except by agreement between them based on equality."¹³² This observation reflects the Soviet preference for specific written consent as a condition precedent to the existence of legal obligations.

The current Soviet dissatisfaction with customary international law, as well as some treaty law, has been noted by Crane. He has

¹³¹ *Ibid.* Compare Lissitzyn, "The Soviet View of International Law," 14 *Naval War College Review* 1 (1961).

¹³² Tunkin, *supra* note 103, at 430. So far as some of the new states are concerned "The Soviet Union's outspoken attitude toward custom has provided them with a powerful example." Abi-Saab, *supra* note 117, at 106.

stated that Soviet writers, such as Korovin, Kozhevnikov and Zadroznyi, have held that customary international law "must represent the wills of the socialist countries in order to be binding," and that this fact is determined by Soviet "consent."¹³³ Crane has concluded that Soviet resistance to customary international law is based on the view that "an absolute agreement of wills between socialism and capitalism is impossible anyway."¹³⁴ While the Soviets acknowledge the existence and importance of international law, they regard it as being in a condition of progressive transformation to the end that it will more proximately serve the political goals of the Soviet state.¹³⁵

Lurking in the not too distant background of Soviet thinking on the development and force of an international customary law of outer space is the matter of security and self-defense. As a closed society the Soviets have long maintained an almost irrational concern for secrecy and for the elimination of information gathering concerning their activities. It has been in this light that in July 1960, Soviet writers alleged that the United States was trying to develop evidence of "customary norms of law" so that the United States might be able legally to employ reconnaissance satellites.¹³⁶ It has been the contention of Soviet officials and writers that the use of such satellites would be provocative and aggressive conduct. The United States has maintained such uses to be peaceful, i.e., non-aggressive and beneficial.¹³⁷

Teeming difficulties exist in relying upon customary international law as an effective source in the ongoing legal process. The judicial

¹³³ Crane, "Soviet Attitude Toward International Space Law," 56 A.J.I.L. 719 (1962). The three Soviet authors published their views in "Peaceful Coexistence and International Law," *Izvestiya*, April 18, 1962, p. 5.

¹³⁴ Crane, *ibid.*, 719.

¹³⁵ McWhinney, "'Peaceful Co-Existence' and Soviet-Western International Law," 56 A.J.I.L. 958-962 (1962); *Soviet Space Program*, *supra* note 10. Chapter I, at 191-192.

¹³⁶ Bloomfield, *supra* note 22, at 172. Compare Zhukov, *supra* note 128, at 27-30.

¹³⁷ See pp. 95-103 *supra*. According to former Senator William Benton, he was informed by Premier Khrushchev in May 1964 that "If you wish, I can show you photos taken from outer space." The clear implication was that such photos had been taken by Soviet space vehicles. *Los Angeles Times*, May 30, 1964. By October 1964, news releases from Washington credited the United States "defense experts" with the belief that Soviet Cosmos type satellites were able to make reconnaissance type photographs at heights ranging from about 120 to nearly 300 miles. *Los Angeles Times*, Oct. 19, 1964.

test of constant and uniform usage was applied in the *Asylum Case* in 1950. The Court said:

The party which relies on custom * * * must prove that this custom is established in such a manner that it has become binding on the other party * * * that the rule invoked * * * is in accordance with a constant and uniform usage practiced by the States in question, and that this usage is the expression of a right appertaining to the State granting asylum and a duty incumbent on the territorial state * * *.¹³⁸

In that case the contentions based on the alleged existence of a customary rule were rejected. The cumulative effect of the foregoing factors produced that result. The Court thought that the facts disclosed too much uncertainty and contradiction in the exercise of the practice. It was also held that there had been too much fluctuation and discrepancy in the practice. Many differences of opinion over an extended period had been voiced by officials, and no clear pattern was identifiable. According to the Court, existing international agreements failed to establish a required pattern. Earlier political expediency had too largely infiltrated the claims of the decision makers.

The Court's decision reflected the two major difficulties with respect to custom, namely, "(1) the difficulty of proof, and (2) the difficulty of determining at what stage custom can be said to become authoritative."¹³⁹ Kunz has emphasized the latter, and has noted that "here is the difficult field of distinguishing between a new customary norm which has come into existence, and mere proposals for or tendencies toward creating such new norm."¹⁴⁰

In addition to the defects as to content and method of proof, which characterizes customary law as uncertain law, it usually suffers by reason of relatively slow growth and reliance upon precedent. Usually growing fairly slowly it may be difficult for it to keep abreast of the tempo of the times. "Being based upon precedent, [it has been] * * * unable to fill up the gaps in international law as these were disclosed by the development of clearer conceptions of interna-

¹³⁸ Asylum Case [1950] *I.C.J. Rep.* 276-277; Haley, in "Recent Developments in Space Law and Metalaw—Work of International Groups," *supra* note 10, Chapter I, at 102-106 points out that prior to the development of efficient communications it was difficult to know how extensive common practices actually were.

¹³⁹ Cobbett, *supra* note 106, at 6.

¹⁴⁰ Kunz, *supra* note 102, at 668.

tional justice.”¹⁴¹ Jurists, themselves, have been at fault in not distinguishing clearly enough between customary rules which were “generally adopted by the nations as a body and those to which two or more nations, their own included, have given their consent.”¹⁴² Further, this law is “highly suspected by the new nation-states who have had little direct participation in the past uniformities of behavior from which implicit policies are sought.”¹⁴³

McDougal and Feliciano note additional difficulties with custom as a source of international law. They point out that it provides “few clarifications in terms of detailed principles of content and procedure * * * ”.¹⁴⁴ While agreeing that customary law is not based on the principle of unanimity, they also point to the vagueness of the rules which have been created. This of necessity leads to “many vagaries in interpretation * * * ”.¹⁴⁵ This in itself is not a unique restriction on the customary law of outer space. All law, and especially that portion dealing most intimately with principles, is subject to the vagaries of interpretation. Further, the “soft” law of custom, as opposed to the “hard” law of treaties, particularly lends itself—through interpretation—to the dynamics of the space complex.

Another serious indictment of the customary process is its relative inability to deal with certain types of situations. The process permits forms of conduct but does not cope adequately with the need to negate unpracticed conduct of an antisocial nature. Thus, although the uses of space for purposes of contamination or as an environment for weapons of mass destruction are universally condemned, custom is not so effective in inhibiting unpracticed conduct as in upholding practiced conduct. Nonetheless, it must be argued that the tacit agreement of resource states not to engage in such space practices as these may be creative of an international customary legal duty to abstain from such uses. Explicit treaty arrangements provide a practical form for such law.

Perhaps the gravest problem is to ascertain when practices and usages, which have had no binding legal obligation, are transformed into obligatory legal rules of customary international law. Since custom does not speak for itself, it has long been the duty of legal

¹⁴¹ Fenwick, *supra* note 107, at 72–73. There would not be, for example, the development of customary international law prohibiting the contamination of outer space or prohibiting the orbiting of weapons of mass destruction. Its role is more to authorize than to prohibit conduct.

¹⁴² *Ibid.*, 74.

¹⁴³ McDougal and Feliciano, *Law and Minimum World Public Order* 363 (1961).

¹⁴⁴ *Ibid.*

¹⁴⁵ *Ibid.*

commentators to acknowledge the existence—thereby confirming its past factual existence—of customary legal rules. Customary law must be promulgated by the expert. The scholar has had the duty of examining the evidence—using materials from whatever quarter available—bearing upon the existence of the customary rule. In such a process the evidences of customary law have often been hardly distinguishable “from the customs themselves which made up the law.”¹⁴⁶

In making the required tests to determine the existence of a customary rule of law, the scholar is confronted by two major concerns. He must first be convinced of the existence of the fact of customary law. International morality and courtesy typically precede international practice. At the point where they have been absorbed by “opinio juris,” there is no longer the problem of the existence of custom. Rather, it has now become a separate problem of identifying an existing custom with satisfactory evidence. Evidence, in this situation, becomes a “matter of observation and appreciation, and not of logical and mathematical decision, just as is the answer to the question, How many grains make a heap?”¹⁴⁷ The conduct is a matter of fact, not of theory, and the role of the lawyer then is simply to acknowledge that “the rule which may be abstracted from such conduct is a rule of customary International Law.”¹⁴⁸

Secondly, the scholar must be aware that although international morality and courtesy may precede the acceptance of the customary rules of international law, such law need be neither just nor humane.¹⁴⁹ However, in promulgating the existence of customary international law the scholar need not be deterred by the fact that the customary rules may suit the higher needs of the world community, as, for example, the rule that outer space shall be used only for peaceful, i.e., nonaggressive and beneficial purposes. That the scholar has some election is attested to by the fact that the rules do not speak for themselves and by the further fact that practices may and do vary from those with a high and a low content in justice and humanity. This has been clearly indicated by Fenwick in calling attention to the role of Grotius in setting forth customary rules of international law, and whose views served the needs of the social complex. Fenwick has said:

The great treatise of Grotius would have fallen short both of the author's high purpose and of the world's needs had he been

¹⁴⁶ Fenwick, *supra* note 107, at 73.

¹⁴⁷ Lauterpacht-Oppenheim, *supra* note 115, at 17.

¹⁴⁸ *Ibid.*, 27.

¹⁴⁹ Kunz, *supra* note 102, at 666.

content to do no more than record the actual practices of nations. The urgent task, as he felt, was not to set forth the uncertain and unjust usages of the time, but to lay down better rules of conduct based upon inferences from moral principles acknowledged in the abstract but consistently violated; and his appeal from existing practice to the ideal conduct was so forcible that his words became authoritative and statesmen relied upon his judgments as the correct inference from accepted general principles.¹⁵⁰

The development of a customary law for outer space has been eased by the fact that there have been only consistent practices whereby outer space has been used for peaceful purposes. It is, however, perhaps fortunate that the customary law of outer space relating to peaceful, i.e., nonaggressive and beneficial uses, can look to both established usages and also to broader and more fundamental principles, namely, the extended moral and social values to which the rule so measurably contributes.

While nation-states have not denied the existence of a customary rule of international law requiring that outer space be used for peaceful purposes, and while such states have acted continually in support of this rule, several unofficial commentators have suggested the possibility that such a customary rule does not exist. It should be noted at the outset that these scattered views generally have come from authors who maintain that formal or written international agreements constitute a preferred source of international law. Such authors generally are the spokesmen for a few of the newly independent states. In the latter category are the writings of Abi-Saab who has urged that "Custom as a source of international law is generally on the decline."¹⁵¹ The socio-economic orientation of such writers have been attuned occasionally to Soviet protestations. Thus, Abi-Saab has objected to an extended role for customary international law because it "developed in a social milieu radically different * * *"¹⁵² from that of the newly developing states. Such writers also have sought to base their opposition to custom on the fact that custom has borrowed from legal systems other than those which are being experimented with in some newly independent states. A further objection to custom, as previously indicated, is that it minimizes extreme notions of sovereignty fostered in the Soviet Union and in states falling under the latter's political influence.

¹⁵⁰ Fenwick, *supra* note 107, at 73.

¹⁵¹ Abi-Saab, *supra* note 117, at 106.

¹⁵² *Ibid.*

At least one author has come to conclusions respecting the legal meaning of the IGY experience different from those arrived at in this study.¹⁵³ Writing before the IGY had been concluded, Gorove has sought to negate the intimation of such writers as John C. Cooper¹⁵⁴ that "a broad rule of international law has already been created."¹⁵⁵ Because his views were expressed so early, Gorove failed to have the benefit of the total IGY effort and the continuation of its essential elements after 1958. Thus, his conclusion that the IGY failed to produce any "authoritative prescriptions"¹⁵⁶ can be largely discounted.

The absence of official protests respecting the satellite practices inaugurated in 1957, is clearly one of the major factors in the establishment of a customary rule for space vehicles. However, the effect of a customary rule of international law may always be somewhat influenced by future and as yet unknown national proclamations. The significance of such a contingency has been taken into account by Kunz, who has said: "Protests by other states or declarations that they, even if submitting to this practice, do so only *ex gratia*; protests against the norm on which an international decision is based, even in carrying out this decision, prevent the coming into existence of a new norm of customary international law."¹⁵⁷ Kunz places emphasis on the condition of universality of acceptance rather than on the practical fact of common practices of resource states.

¹⁵³ *Supra*, pp. 80, 127-147.

¹⁵⁴ Cooper, "Flight-Space and the Satellites," 7 *Int'l & Comp. L. Q.*, 82, 87 (1958).

¹⁵⁵ Gorove, "On the Threshold of Space: Toward a Cosmic Law," *First Colloquium* 74 (1959).

¹⁵⁶ *Ibid.*, 76. It is submitted that the conclusion of Leopold who wrote in 1960 is to be preferred. He stated that "the repeated unprotested passes of orbiting space craft launched by one state, over the domains of other states during the past two years, seems indicative that at least a customary rule of international law has been generated to the effect that irrespective of the altitudes to which the sovereign territorial air space of surface states may ultimately be codified as extending, orbital flight should be considered as exempt therefrom, i.e., orbiting vehicles and vehicles in powered flight characterized by momenta greater than the orbital momentum could be considered as enjoying rights of transit analogous to easements or rights-of-way, over the domain of other states." Leopold, "Cosmic Surveillance by Space Flight Momentum," 6 *Wayne Law Review* 329-330 (1960). This comment must, of course, be restricted to peaceful, i.e., nonaggressive and beneficial uses.

¹⁵⁷ Kunz, *supra* note 102, at 667. Kunz does not cite any authority for this proposition, although the observation represents the state's interest in protecting its sovereign choices.

Since, as has already been pointed out, universality is not the test for the establishment of a customary rule of international law, and further, since it is true, as McDougal has urged, that the ultimate function of international customary law is to bind states against their objections, there would not seem to be any difficulty in concluding that international customary law can tolerate some affirmative opposition and still be a binding source of law. At this time, in the absence of official protests regarding satellites presently in orbit, the problem has not arisen as to whether a customary rule of international space law can bind a state against its consent. The ongoing space practices and usages have been so generally accepted and conformed to as to permit the international community to disregard the prospective objections or claims of a dissident minority. It may be asserted that space practices and usages have hardened to the point that there now exists a customary rule of law requiring that outer space be used for peaceful, i.e., nonaggressive and beneficial, purposes.

This discussion to this point has been concerned exclusively with the peaceful uses of outer space and has not been concerned with the fact that while a customary international law for peaceful uses was being developed that other rules of customary international law were also emerging. A collateral development has to do with the problem of sovereignty over the airspace and outer space. Two discerning writers have endeavored to appraise the condition of lack of protest, or tacit consent respecting peaceful uses, in terms of lack of national sovereignty over outer space.

Goedhuis, writing in 1962, referred to the American Bar Foundation Report prepared by Lipson and Katzenbach.¹⁵⁸ According to Goedhuis, the conclusion that "the failure of States to register formal protests against space activities is reasonably—though not conclusively—to be construed as an acknowledgment that territorial air space does not extend to the perigee of any of the satellites so far launched * * *," is not convincing.¹⁵⁹

Goedhuis has endeavored to distinguish between the fact that satellites do orbit freely and the legality of such action. Thus, while he has admitted that the current practice is based on enlightened self-interest, and that tacit consent does result from the permissive action presently engaged in, yet for him this is not enough. First he has

¹⁵⁸ *Legal Problems of Space Exploration*, *supra* note 10, Chapter I, at 779, 784–787.

¹⁵⁹ Goedhuis, "Some Trends in the Political and Legal Thinking on the Conquest of Space," 9 *Netherlands Law Review* 122 (1962).

pointed to the failure of states to give reasons for permitting satellites to orbit freely in superjacent areas. Secondly, he has noted the fact that states have not arrived at an agreement as to the upper limits of their sovereignty in airspace. Third, he has made the point that satellites operating at perigee levels are situated in an environment where there is at least some air, however minute such particles may be. Finally, he has asserted in effect that states may change their positions, and at some future, but undisclosed date, a state may protest against the presence of superjacent satellites on grounds of sovereignty.¹⁶⁰

With respect to national protests he has claimed that "The present Russian lack of protest against the American reconnaissance satellites is most probably due to a variety of reasons amongst which are the present unavailability of effective means to stop them, the danger of security not being thought to have been such as to call for a protest, and last but not least to the advantage of mutual toleration at the present moment."¹⁶¹

Goedhuis has recognized that he must assume the burden of negating the effect of the resolutions adopted at the United Nations if his argument is to receive any credence. Thus, the provisions of the General Assembly's unanimously adopted resolution on "International Co-operation in the Peaceful Uses of Outer Space" 1721 (XVI), December 20, 1961, setting forth the principle that outer space is free for exploration and use by all states, is characterized as an "equivocal passage." He then asserts that it would be "erroneous" to conclude as a result of the Resolution that "a rule of international customary law of freedom of passage of foreign satellites through national airspace already exists * * * ".¹⁶²

Goedhuis' error lies in assuming that there is a legal relationship between areas where air may be found and the use of this as a demarcation between outer space and airspace. Such a line, if and when drawn, will not be the product of purely scientific considerations, but rather will be very largely the product of political-legal factors.¹⁶³ However, were one to assume, with Goedhuis, that satellite perigee levels and landing patterns fall into an area or within a zone in which a minute amount of air may be found, this could not negate

¹⁶⁰ *Ibid.*, 122-123.

¹⁶¹ *Ibid.*, 124-125.

¹⁶² *Ibid.*, 125. Goedhuis relies on B. Cheng, "United Nations and Outer Space," *Current Legal Problems*, (n.p.) (1961).

¹⁶³ Johnson, "The Future of Manned Space Flight, and the 'Freedom' of Outer Space," *NASA News Release 11-14* (August 4, 1962).

the validity of the practices and the claims advanced and accepted in the international community since 1957.

These claims have been formalized by national acknowledgments of known practices and by the force of the United Nations discussions and resolutions. For example, Secretary of State Rusk in testimony before the Senate Committee on Foreign Relations on August 6, 1962, in referring to UN Resolution 1721 (XVI), declared that through it "a firm foundation of fundamental principle has been laid * * *" for the law of outer space. In his view the Resolution constituted a "basic source of legal principle," and though he noted that the Resolution merely commended the principles to member states, "the United States takes the position that these principles are presently the law; the unanimous action of the General Assembly in adopting the resolution, as action by the governments of the world assembled, confirms this view."¹⁶⁴

In view of such unequivocal declarations on the part of the major resource state in the field of outer space, it would appear that fears on the part of Goedhuis, that the requisite conviction that the peaceful uses of outer space had become a legally binding practice, have little merit.

Significant conclusions have been advanced by Johnson in his analysis of space practices as related to both the problem of sovereignty and the problem of peaceful uses. His analysis does not take into account UN Resolution 1721 (XVI) since his position was stated in April, 1961, prior to the action of the UN. Johnson, after referring to three and one-half years of space activities—including launching, orbiting, and return—on the part of the resource states, asked what legal conclusions could be drawn from the fact that "No permission was sought in advance, none was expressly given by any state, and not a single protest has been registered by any other states."¹⁶⁵ As general counsel of the National Aeronautics and Space Administration, his views are most significant:

Alternative conclusions, I believe, can be drawn. The first of these is that territorial sovereignty does not extend as high as the minimum altitude at which the orbiting of these satellites has taken place (about 100 miles) and that no state has the right

¹⁶⁴ Rusk, "Foreign Policy Aspects of Space Communications," 47 *Department of State Bulletin* 318 (1962).

¹⁶⁵ Johnson, "Remarks," *Proceedings of the American Society of International Law* 167 (1961).

to exclude other states from the use of any part of 'outer space' above this altitude. The alternative theory is that, so long as the upward limit of territorial sovereignty is not defined by explicit agreement, the practice of the past three and a half years serves only to establish a right of passage for spacecraft of a scientific, exploratory, and non-military nature; but that the claim of territorial sovereignty might still legally be invoked to exclude other types of spacecraft serving other purposes.

At most, the practice of the past three and a half years leads to the conclusion that territorial sovereignty does not extend higher than the point at which the free orbiting of a useful earth satellite can occur. It is not necessary to conclude from this that territorial sovereignty *should* extend that high.¹⁶⁶

Johnson also clearly stated the relationship between the doctrine of national sovereignty and the right to take action of a defensive nature. He said:

It should be noted that the upward delimitation of territorial sovereignty does not imply that activities which threaten peace and security are to be permitted in outer space, nor does it mean that a state would not be free to take legitimate self-defensive measures in outer space. The extent of territorial sovereignty is not the criterion for such matters.¹⁶⁷

Johnson's comments highlight the interrelationship between national self-defense in all environments, the concept of sovereignty as related to security, the fact that there is no rule of law separating airspace from outer space,¹⁶⁸ and the need for mankind to benefit from the free and peaceful launching, orbiting, and return of useful satellites. These factors have affected the development of a rule of customary law calling for the peaceful uses of outer space. On the basis of experience observed from the vantage point of 1963, the first of Johnson's tentative alternatives needs to be amended slightly. With the current emphasis on free and peaceful uses, rather than sovereign zones, his reference to "use" only appears to be too narrow. It is submitted that nonpeaceful uses of space devices at any altitude, being in conflict with the rule that peaceful, i.e., nonaggressive and beneficial, uses may be engaged in, will be considered to be illegal.

¹⁶⁶ *Ibid.*

¹⁶⁷ *Ibid.*

¹⁶⁸ Schachter, "Who Owns the Universe?" in Ryan, ed., *Across the Space Frontier* 130 (1952); Roy, "Remarks," 50 *Proceedings of the American Society of International Law* 94-96 (1956); Lipson, "Remarks," 55 *ibid.* 184-185 (1961).

Johnson's alternative theory also has much to commend it. However, in seeking specificity he has employed the term "non-military nature" without defining it to mean nonaggressive military activities. With this modification the alternative theory conforms to current usages and has been incorporated into the customary international law of outer space. Both alternatives call attention to the need for clarification of what is meant by "peaceful uses."

Reassessing the practices of states in outer space on August 4, 1962, Johnson arrived at a conclusion which is implicit in what has just been stated. He noted the need to formulate some kind of "international control directed toward specific space activities, regardless of the location of their occurrence."¹⁶⁹ In arriving at such control Johnson urged the establishment of a realistic ceiling for "the 'closed' space which is under the exclusive unilateral control of each underlying State. If we are serious about the freedom of space exploration, we must not underestimate the area of 'free' space which is required for that activity."¹⁷⁰

After referring to the practices of nations from 1957 to August of 1962, Johnson arrived at a single legal conclusion, thereby making an election between the various possibilities suggested by him early in 1961. This conclusion, which was patently influenced by both repetitive space practice and usage and by the United Nations Resolution of December 20, 1961, was that "the nations have not regarded territorial sovereignty as extending as high as the point at which the orbiting of these satellites has occurred."¹⁷¹

From this analysis it will be seen that practices of states which have led to the creation of a customary rule of international law of the peaceful, that is, nonaggressive and beneficial uses of outer space, have also contributed very materially to the establishment of a cus-

¹⁶⁹ Johnson, "The Future of Manned Space Flight and the 'Freedom' of Outer Space," *supra* note 71, at 5.

¹⁷⁰ *Ibid.*, 3.

¹⁷¹ *Ibid.*, 6. The early views on the most desirable specific elevations separating sovereign from nonsovereign areas were in wild discord and have left no lasting impression on the substantive law of outer space. Major opinion presently suggests that a line between sovereign control over airspace and the free use of outer space for peaceful purposes should be at a relatively low elevation—from twenty-five to one hundred miles above the surface. Arguments for a low boundary are based on the need to provide suitable freedom to descending vehicles, reduction of disputes, facilitation of evidentiary accumulation, general ease of management for hybrid type craft, and the increasing recognition that any such boundary has little or no relationship to the maintenance of international peace and security or national self-defense.

tomary rule of free movement in certain areas superjacent to a state. In arriving at a conclusion on this subject it is important to note that the extent of sovereignty will never depend upon artificial, scientific, or arbitrary views as to a line of delimitation between air-space and outer space, but will rather depend, as suggested earlier, on political-legal considerations as affected by considerations of international peace and security and national defense. Although there is no doubt that a state may protect itself in areas not subject to its sovereignty, still the approach to delineating airspace from outer space suggested by Johnson is sound. According to him the "primary question is not where outer space begins but where the upward reach of the exclusive power of the underlying state ends."¹⁷²

Taking into account the total space experience, Johnson has suggested the existence of substantive law going beyond the concept of the peaceful uses of outer space, as used herein, to include the presence of law fixing the physical limits subject to the exclusive control of a state. He has summed up the situation by stating "it appears that the existing state of the law is that we have an area of space extending upward from the surface of the earth for an indefinite distance which is exclusively controlled by the underlying state—an absolutely 'un-free' area, one might say—and above that, beginning at some undefined point, lies the 'free' realm of outer space."¹⁷³ The contrast between the views of Johnson and Goedhuis respecting the development of rules of customary international law from the total space experience is manifest.

On the basis of the numerous views presented above it may be concluded that there now exists a customary rule of international law requiring that outer space be used freely for peaceful purposes, and that such peaceful purposes include all of the nonaggressive and beneficial uses for which space vehicles have been employed up to and at this time. It may be concluded also that the same practices which have made it possible for such a rule to come into being uphold the principle (or rule) that at a given but unascertained point, which point will be duly ascertained and established in the future, the exclusive control of the subjacent state terminates.

While aggressive uses of space are objectionable no matter where engaged in, and while peaceful uses may be engaged in freely at elevations countenanced by present customary law, there remains an ongoing problem respecting the transiting of a space satellite at ele-

¹⁷² *Ibid.*, 7. An essential theme of this book is that space must serve the needs of mankind, and that legal rules must be man oriented and must serve human needs.

¹⁷³ *Ibid.*

vations commonly employed at present by aircraft and balloons. While it is entirely probable that space satellites, either in the course of launch or while returning to earth for landing, may transit over nation-states at very low altitudes (from fifty miles down to the surface), it is also clear that there has been no final fact respecting this potential capability. There is, however, increasing evidence that landing vehicles may be obliged to transit for as many as 5,000 miles at elevations under 50 miles while preparing for, and engaging in landing procedures. Thus, there does not appear to be any practical legal answer at this time to this problem except insofar as the resolutions taken at the U.N. may provide guidance.

The need to consider this problem has been noted by Johnson, who has observed that if it is to be solved "it will be done on the basis of an accommodation of the political interests of the States concerned."¹⁷⁴ In recalling that the U.N. Resolution of December 20, 1961, laid stress on the freedom of outer space, Johnson has pointed out that this means "the principle of freedom from unilateral control—freedom from the power of an individual State to exclude others from the enjoyment of this great new resource."¹⁷⁵

Johnson has summarized the needs of nations qualified to engage in space activities in these words: "The area within which the underlying State possesses the right to 'veto' the activity of another State must not be permitted to extend to altitudes which would hamper the freedom of space exploration."¹⁷⁶ The use of outer space depends as much on the ability to transit freely through the lower airspace en route to and from orbital voyages as it does upon freedom of orbital transit. Since manned space flight is presumably constructed on the thesis that the current space traveler expects to return safely to earth, and this in turn assumes that he contemplates peaceful, i.e., nonaggressive and beneficial activities while located within his space vehicle, it may very well arrive that a kind of "innocent passage" will be accorded such travelers and their space vehicles while situated in the lower airspace while en route to or from orbital elevations. If this concept appears reasonable for manned space flight, there would seem to be no reason for not applying it, under the same relevant conditions, to nonmanned space flight. The dictates

¹⁷⁴ *Ibid.*, 14. In discussing a situation in which a merchant vessel has entered the territorial waters of a foreign state, it has been urged that there ought to be "in the interests of stability and certainty of international intercourse, mutual restraint in the assertion of jurisdiction by the coastal state * * *." Boczek, *Flags of Convenience* 289 (1962).

¹⁷⁵ *Ibid.*

¹⁷⁶ *Ibid.*

of international peace and security and national self-defense would, of course, impose reasonable limitations in both cases upon the exercise of such a right.¹⁷⁷

A brief recapitulation of the significance of customary international law as related to outer space is in order. At this time, as in times past, custom is the very life of the common law of nations. It is an accumulation of favored ways of doing things. It is not so much something which has already been settled as it is the means or process whereby the required consensus is effected. This consensus may be the product of affirmative action or may result from the acceptance of a condition. The process of custom demonstrates that outer space usages do in fact exist and that they have been generally accepted by enough states, including the resource states, as to be considered obligatory. Where such common expectations exist a deviation therefrom may be regarded as a violation of the applicable customary legal norm. In this way customary international law serves the important purpose of creating a line between permissible and impermissible conduct. In the long run the effectiveness of this process depends upon the willingness of states to engage in mutual accommodations, which is as central to international law as to other legal forms.

The role of customary law is particularly important in the world community's legal order. Here the legal order is built around a highly decentralized decisional process, particularly when compared with the integrated decisional process of a nation-state. The dispersed international forum with its primitive legislative process comes into high relief when compared with national processes. The difficulty of obtaining written agreements when the negotiators number into the hundreds needs no emphasis here. It does, however, argue for the creative use of customary law. So far as detailed outer space problems are concerned, despite many demands for particular written conventions, the varying national points of view at the time of this writing have prevented the achievement of formal treaties. The result is that outer space is essentially free of conventional law. Further, the treaty process, even at its best, is generally unequipped to deal with but a few of the myriad interstate transactions and events. This has been especially true "in questions touching the possession of rights."¹⁷⁸

As a result of these facts, general policy considerations advantageous to states at large favor the facilitation of the development of

¹⁷⁷ This concept is discussed in detail at pp. 234-273, 417-419 *infra*.

¹⁷⁸ Corbett, *Law and Society in the Relations of States* 34 (1951).

law through practice and usage. The needs of the world community are not served by placing unreasonable obstacles in the way of the customary process.

Law can be produced only by consent. Consent, however, is derived from total conduct, of which express agreement is but one of many variations. The law of contract frequently places emphasis upon injurious reliance or inducing behavior as well as upon the meeting of wills in an oral or written compact.¹⁷⁹ Through reliance upon custom as a source of law it becomes possible to base consent upon implicit or tacit behavior as well as upon express and written agreement.

Custom, in addition to meeting the problems of a loosely organized world community, also possesses certain practical advantages. It avoids the need of unanimity, which so frequently burdens the formal treaty process. Further, customary law can bind the entire community. So far as the law of outer space is concerned only the major resource states need align themselves with and conform commonly to a given practice for it to take on the quality of a rule of customary international law. Such law must necessarily serve the needs of the entire community. Such law, when established with appropriate consent—whether implicit, tacit, express, or overt behavior—becomes binding upon the many. Sir Frederick Pollock expressed this as follows: "As among men, so among nations, the opinions and usage of the leading members in a community tend to form an authoritative example for the whole."¹⁸⁰ When such law has become binding it cannot be lightly cast aside, and occasional breaches or failure to conform do not render it invalid.

This is true because such law is based upon the fact of comparable capabilities in outer space on the part of the leading members of the world community—whose practices and policies it must be noted are not entirely self-centered and must take into account the needs of like-minded nations. In this process the resource states must represent the needs of the whole community, for even as between contending members of the world community there exists a range of fundamental, common expectations and mutual interests.

Such expectations and interests are derived from the conduct of persons in the general legal sense, namely, the practices of individuals, private business organizations including such enterprises as corporations and comparable legal entities, scientific organizations both national and international in scope and composition, nation-

¹⁷⁹ Paton, *A Text-Book of Jurisprudence* 356–359 (2 ed. 1951).

¹⁸⁰ Pollock, "The Sources of International Law," 2 *Columbia Law Review* 512 (1902).

states through whatever department, agency, or facility they elect to employ, and, of course, international organizations—both public and private. The nature of the practice or usage is central to the development of customary international law rather than the precise instrumentality through which the conduct is managed or takes place.

Resource states, themselves, and through permission granted to other legal persons, by engaging in space programs—including launches and orbital activity—have asserted a legal right to engage in the peaceful uses of outer space. No resource state has either expressly or by implication suggested that such uses of outer space are tainted with illegality. The lack of protests on the part of the non-resource states, together with their tacit acceptance of existing space practices, are established facts. The only conclusion which has been drawn and which reasonably may be drawn is that the present, ongoing factual pattern of peaceful space conduct is permissive under customary international law. The nonresource states have frequently attested to this fact at the United Nations by urging that outer space without law can only result in chaos and that a rule of peaceful uses will be of benefit to them. Further, they have frequently described as urgent the need for universal recognition of these facts. The views expressed at the U.N. are of singular importance, since national expressions in that forum and the reports presented and resolutions and recommendations adopted possess a very high degree of credibility as to the substance of customary international law.¹⁸¹

In short, the facile recognition of the development of customary rules of international space law avoids the need of formal and express unanimity in the international decisional process and it also suits the needs of all states, large and small. While the existence of a customary rule of law for outer space may contribute to the enhancement of stabilizing influences, it is obvious that the mere existence of such a rule can not produce favorable results automatically.

Customary international law has the further advantage in that it may be consciously creative. It may require new patterns of conduct, and it may move as swiftly or as slowly as the requirements of the social complex dictate. It may also carry forward old usages, and new members of the world community may be confronted with the duty to conform. New states admitted to the United Nations become *ipso facto* parties to the Statute of the International Court of Justice. Article 38 of that Statute provides, in part, that the Court de-

¹⁸¹ The position of Ceylon as stated by Mr. Malalasekera on December 10, 1962, before the First Committee of the General Assembly, fully illustrates this general attitude. *U.N. Doc. A/C.1/PV.1296*, 32–42. See pp. 195–205 *infra* for a more detailed analysis of this position.

cides disputes in accordance with international law, by applying international custom, as evidence of a general practice accepted by law. It should be noted that the Article simply calls for a general, rather than a universal practice.

Customary law, as a source of international law, is confronted with abundant problems. Perhaps the most difficult is that it does not speak in recorded form. Because of its nature it constantly stands in need of human approval and promulgation. Traditionally the role of publicists has been to declare its existence. Each new rule of customary international law depends upon its own evidence, and this must vary according to different times, communications, needs and scientific capabilities, among others. Nonetheless, customary rules of international law have contributed significantly to acceptable human behavior as regards the seas, the continental shelf, airspace, and now outer space. While the role of the publicists in recognizing the existence of customary rules is an important one, it is also a preliminary one. Official recognition through judicial imprimatur may give it higher acceptability.¹⁸² Treaties may acknowledge the express existence of inherent customary rights.¹⁸³ But law without the process of custom would be slow in acceptance and late in helping to resolve the needs of the world.

Turning from the processes whereby customary international law is created to the substance of the rule providing for the peaceful uses of outer space, it should be noted that this rule supports a standard of values of utmost importance to the social complex. The policy of the United States has been that the introduction into outer space of weapons of mass destruction, capable of being used for aggressive purposes, could not serve the interests of the United States or of mankind. Thus, if the world can come to live with and by the rule of peaceful uses of outer space, there may be a possibility that the rule, because of its fundamental reasonableness, may be extended to other areas of man's total conduct. It could even serve as a foundation upon which other fields of substantive law might be based. In this connection it should be remembered that the substantive law of outer space, both in existence and now in the process of building, is subject to legal principles wherever they may be found. In addition to the principle or rule of peaceful uses of outer space, that environment is also subject to the terms of the U.N. Charter and to applicable rules of general international law.

¹⁸² *New Jersey v. Delaware*, 291 U.S. 361, 383-384 (1934).

¹⁸³ Article 51 of the United Nations Charter, for example, acknowledges the existence of the prior inherent and customary right of self-defense under international law.

2. General International Law and Comity

It has been suggested that certain space practices and usages have ripened into customary rules of international law, and, as such, are binding upon the members of the world community. It might, however, be contended that such practices and usages were merely the product of the condition of comity. The distinction between law and comity is well known.

Comity is a relationship enjoyed by states. Practices are freely engaged in as a matter of courtesy, and are not mandatory. Such practices are not required by law. United States courts have provided suitable explanation of the concept.

The Court of Appeals of New York has stated that "Comity may be defined as that reciprocal courtesy which one member of the family of nations owes to the others. It presupposes friendship. It assumes the prevalence of equity and justice. Experience points to the expediency of recognizing the legislative, executive, and judicial acts of other powers. We do justice that justice may be done in return."¹⁸⁴ An earlier decision by the United States Supreme Court held that "'Comity,' in the legal sense, is neither a matter of absolute obligation, on the one hand, nor of mere courtesy and good will, upon the other. But it is the recognition which one nation allows within its territory to the legislative, executive or judicial acts of another nation, having due regard both to international duty and convenience, and to the rights of its own citizens, or of other persons who are under the protection of its laws * * *"¹⁸⁵

The practices performed under the concession of comity create no legal rights, *per se*. Nonetheless, such practices when they have ripened into usage may assume the form of customary international law. In view of the facts presented above it is believed that the current view most commensurate with reality is that the common demands for free and peaceful uses of outer space have gone beyond the reach of comity, and have become principles or rules of international law.

3. National and International Expressions: Claim and Acquiescence

a. Special International Law

Special, as distinguished from general international law, is the product of a different process than that involved in the creation of

¹⁸⁴ *Russian Socialist Federated Soviet Republic v. Cibrario*, 235 N.Y. 255 (1923).

¹⁸⁵ *Hilton v. Guyot*, 159 U.S. 113 (1895).

customary rules of law. The customary process emphasizes the role of accomplished action. In the realm of special international law the emphasis is upon limited or restricted claims. In both instances the claims contemplate the bargain of reciprocal action based on mutuality of interests, and where action follows such claims the acquiescence, particularly if spelled out in some kind of written understanding, takes on the quality of international law valid for the bargaining parties. Thus, special international law may result from the acceptance by a nation of the offer of another nation as put forward originally in a unilateral claim. The obligation becomes that of the negotiating parties. If many parties make and accept the same claims the obligation becomes a general one. Claim and acquiescence may be bilateral and multilateral.

So far as outer space is concerned the bilateral claims have been promulgated by the two major resource nations principally through known practical conduct and by exchanges of correspondence by the respective heads of states, although in a larger sense the claims are reflected in all public official statements. Claims have been addressed to the international community at the United Nations and have resulted in significant resolutions. Claims have also been expressed at other public and private international conferences.

(1) National Claims

Under this heading only the claims of the two major resource nations will be discussed. An additional limitation will be imposed whereby only the exchanges of viewpoints by the heads of states will be considered at this time.

At the outset it must be remembered that claims relating to the use of outer space and respecting its management and control generally have not been separated from other considerations. That is, claims relating to space have almost always been attached to or encumbered with other political-legal problems. Hence, the importance of such other problems as disarmament, international peace and security, national self-defense, foreign military bases, and comparable international difficulties has manifestly affected the environment in which space claims have been made and received.¹⁸⁶ The interrelated quality of such claims has resulted in the exercise of great caution in their

¹⁸⁶ It is not necessarily a paradox that during periods of international tension limited agreement is often reached on specific subjects. During such periods of cold-war maneuvers, and possibly even because of this condition, space was used for the peaceful purposes indicated above. Acceptable space practices—with their impact upon customary law—have been engaged in by the two major powers during the cold war.

analysis and appraisal. It has also resulted in the transfer in some measure of the decisional forum from the political-legal to the scientific and technological policy maker. This has produced substantial international cooperation among those who actively manage and direct space programs. Their scientific and technological orientation has facilitated their putting to one side typical political-legal problems with the result that cooperative action has been facilitated. Their action, of course, has had a profound effect upon the growth of customary rules of law.

The first effort to clarify United States-Soviet attitudes on outer space at the heads of state level goes back to Premier Bulganin's letter to President Eisenhower shortly after the launch of the first successful Sputnik. In his letter of December 10, 1957, Bulganin referred briefly to the Soviet launching of an artificial earth satellite, Soviet scientific and technological advancements, Soviet peaceful intentions, and the "mistake" of the United States and NATO countries in misjudging Soviet intentions in the light of Soviet space capabilities.¹⁸⁷

On January 12, 1958, in reply, President Eisenhower introduced his proposal relating to the use of outer space by stating:

I propose that we agree that outer space should be used *only for peaceful purposes*. We face a decisive moment in history in relation to this matter. Both the Soviet Union and the United States are now using outer space for the testing of missiles designed for military purposes. The time to stop is now.

I recall to you that a decade ago, when the United States had a monopoly of atomic weapons and of atomic experience, we offered to renounce the making of atomic weapons and to make the use of atomic energy an international asset for *peaceful purposes only*. If only that offer had been accepted by the Soviet Union, there would not now be the danger from nuclear weapons which you describe.

The nations of the world face today another choice perhaps even more momentous than that of 1948. That relates to the use of outer space. Let us this time, and in time, make the right choice, the peaceful choice.

There are about to be perfected and produced powerful new weapons which, availing of outer space, will greatly increase the capacity of the human race to destroy itself. If indeed it be the view of the Soviet Union that we should not go on producing

¹⁸⁷ "Premier Bulganin to the President," 38 *Department of State Bulletin* 128 (1958).

ever newer types of weapons, can we not stop the production of such weapons which would use or, more accurately, misuse, outer space, now for the first time opening up as a field for man's exploration? Should not outer space be dedicated to the peaceful uses of mankind and denied to the purposes of war? That is my proposal.¹⁸⁸

In this manner the great discourse respecting the peaceful uses of outer space began. In the following month the heads of the two resource states again exchanged written views on the uses of outer space.

Premier Bulganin on February 1st, 1958, wrote an extended letter to the President summarizing Soviet views on numerous cold war subjects. On the subject of outer space he wrote:

We, of course, do not deny the importance of the question of using outer space for *peaceful purposes exclusively*, i.e., first of all, of the question of the prohibition of intercontinental ballistic missiles with nuclear warheads. I hope, however, Mr. President, that you will agree that this question can be considered only as a part of the general problem of the prohibition of nuclear and rocket weapons. It is for that very reason that the Soviet Union, in the interest of strengthening peace and reaching agreement on questions of disarmament, is also prepared to discuss the questions of intercontinental missiles, provided the Western powers are prepared to agree on the prohibition of nuclear and hydrogen weapons, the cessation of tests of such weapons and the liquidation of foreign military bases in the territories of other states. There can be no doubt that in such a case the reaching of an agreement on the use of cosmic space for *peaceful purposes exclusively* would not meet with any difficulties.¹⁸⁹

The Soviet view that a consideration of the designated problems disturbing man on the earth's surface would have to be discussed concurrently with the problems of outer space, before the latter situation could be expressly clarified, has frustrated the rapid development of formal written agreements affecting the space environment. The remaining exchanges between the two heads of state have floundered on this point.

President Eisenhower in responding to the Bulganin note again gave important recognition to his earlier claim that outer space

¹⁸⁸ "President Eisenhower and Premier Bulganin Exchange Correspondence on Proposals for Reducing International Tensions." 38 *ibid.* 126 (1958). (Italics added.)

¹⁸⁹ "Premier Bulganin to the President," 38 *ibid.* 379 (1958). (Italics added.)

should be used only for peaceful purposes. In this context he wrote on February 15, 1958:

Another new idea was that outer space should be perpetually dedicated to peaceful purposes. You belittle this proposal as one made to gain strategic advantages for the United States. Mr. Khruschev in his Minsk speech [of January 22, 1958, which, in a longer and more intemperate vein, was the basis of the Bulganin letter] said, 'This means they want to prohibit that which they do not possess.'

Since the record completely disproves that uncalled for statement, may we now hope between us to consider and devise co-operative international procedures to give reality to the idea of *use of outer space for peace only.*

When the United States alone possessed atomic weapons and the Soviet Union possessed none, the United States proposed to forego its monopoly in the interest of world peace and security. We are prepared to take the same attitude now in relation to outer space. If this peaceful purpose is not realized, and the worse than useless race of weapons goes on, the world will have only the Soviet Union to blame, just as it has only the Soviet Union to blame for the fact that atomic and nuclear power are now used increasingly for weapons purposes instead of being dedicated *wholly to peaceful uses* as the United States proposed a decade ago.¹⁹⁰

Premier Bulganin replied on March 3, 1958, by stating that the Soviets would be willing to discuss at a summit conference "the questions of prohibiting the use of outer space for military purposes and the liquidation of alien military bases on foreign territories."¹⁹¹ A broader Soviet proposal, however, was received on March 15, 1958:

In order to ensure the security of interests of all States to the maximum degree, and also in the interests of developing international co-operation in cosmic-space research for peaceful purposes, the Soviet Government proposes the conclusion of a broad international agreement which would include the following basic provisions:

1. A ban on the use of cosmic space for military purposes and

¹⁹⁰ "President Calls for Positive Response from Soviet Union on Establishing Better Relations," 38 *ibid.* 373-374 (1958). (Italics added.)

¹⁹¹ "Letter of Premier Bulganin to President Eisenhower, March 3," 38 *ibid.* 650 (1958).

an undertaking by States to launch rockets into cosmic space only under an agreed international programme.¹⁹²

The Soviets also proposed the establishment within the framework of the United Nations of an international system of control to achieve the foregoing objective. Additionally, the Soviets proposed the creation of a United Nations agency for international cooperation in the study of outer space, having the following functions:

To work out an agreed international programme for launching intercontinental and space rockets with the aim of studying cosmic space, and supervise the implementation of this programme;

To continue on a permanent basis the cosmic-space research now being carried on within the framework of the International Geophysical Year;

To serve as a world centre for the collection, mutual exchange and dissemination of information on cosmic research;

To coordinate national research programmes for the study of cosmic space and render assistance and help in every way towards their realization.¹⁹³

The Soviet government also presented these proposals to the thirteenth session of the General Assembly of the United Nations. As before, the Soviets connected the space issue with other cold war subjects and tied the foregoing proposals to the elimination of foreign military bases on the territories of other states.

With the taking of the office of Premier by Mr. Khrushchev, world attention was directed to the announcement by the Soviet Union on April 1, 1958, that it was unilaterally suspending atomic and hydrogen weapons tests. This was conveyed to President Eisenhower in a letter dated April 4, 1958, from the Soviet Premier.¹⁹⁴ In his reply of April 8, President Eisenhower referred, among other subjects, to his earlier representations in favor of the peaceful uses of outer space. He stated "You will also recall my proposals for the international use of outer space for peaceful purposes emphasized in my recent correspondence with Chairman Bulganin. These proposals await Soviet acceptance."¹⁹⁵

¹⁹² II *Documents on Disarmament*, 1945-1959 976-977; *Legal Problems of Space Exploration*, *supra* note 10, Chapter I, at 994.

¹⁹³ *Ibid.*

¹⁹⁴ "Premier Khrushchev to the President," 38 *Department of State Bulletin* 680-681 (1958).

¹⁹⁵ "President Asks U.S.S.R. To Agree To Begin Study of Specific Disarmament Measures," *ibid.*

Premier Khrushchev replied on April 22, 1958. In referring to the prior exchanges on the subject of outer space, Khrushchev, on April 22, 1958, stated that the Soviets had "seriously considered" earlier American proposals that outer space be reserved for peaceful purposes only, and he noted that the Soviets had previously been on record that they "were prepared to consider at a summit meeting the question of the prohibition of the use of outer space for military purposes and the liquidation of military bases in foreign territories."¹⁹⁶ He further stated that the Soviet Union was "prepared to conclude an agreement which would provide for the prohibition of the use of outer space for military purposes and would permit the launching of rockets into outer space only in accordance with an agreed international program of scientific research."¹⁹⁷ He conceived of the American proposal for the use of outer space for peaceful purposes only as limited to the "prohibition of intercontinental ballistic missiles alone * * *"¹⁹⁸ and as a proposal failing to take into account other important aspects of the space problem. He therefore related the concept of peaceful uses of outer space to the general problems of national security and self-defense, and arrived at no fixed response. His position was based on his fear that the American proposal would result in a favored military position for the United States.

President Eisenhower's reply to the Soviet note was very brief. He restated his belief that "the international use of outer space for peaceful purposes * * *"¹⁹⁹ was a significant goal and that the proposal constituted an open and ongoing offer.

In Khrushchev's reply on May 9, 1958, he confined his letter to the ending of atomic and hydrogen bomb tests and made no reference to the subject of the peaceful uses of outer space.²⁰⁰ President Eisenhower's note of May 24, 1958, also dealt exclusively with disarmament problems.²⁰¹ In a talk delivered by Secretary of State Dulles on June 6, 1958, reference was made to the proposals contained in President Eisenhower's letter to Premier Bulganin of January 13, 1958. The President had called for the use of outer space only for peaceful purposes. The Secretary of State noted that "so far the Soviet reply

¹⁹⁶ "Premier Khrushchev to the President," *ibid.* 814 (1958).

¹⁹⁷ *Ibid.*

¹⁹⁸ *Ibid.* He stated "The essence of your proposal is to prevent, through the prohibition of intercontinental ballistic missiles, a nuclear counterblow through outer space from being delivered against yourselves."

¹⁹⁹ "The President to Premier Khrushchev," *ibid.*, 811 (1958).

²⁰⁰ "Premier Khrushchev to the President," *ibid.*, 940-942 (1958).

²⁰¹ "The President to Premier Khrushchev," *ibid.*, 939 (1958).

has been evasive * * * [but that the government would nonetheless endeavor to] devise and implement programs for the peaceful use of outer space."²⁰²

By mid-1958, the two major resource states had become so concerned with major security issues, particularly disarmament and atomic and hydrogen weapons testing, that exchanges on the subject of the peaceful uses of outer space were discontinued, although the President continued to be firm in his support of his announced policies. It was, for example, in this vein that in his State of the Union Address in January, 1959, that he stated "We seek to prevent war at any place and in any dimension."²⁰³

American discussions with the Soviets respecting the establishment of a formal written rule that outer space might be used only for peaceful, i.e., nonaggressive and beneficial, purposes, although it did not result in a written agreement, was, nonetheless, not a loss. The development of customary principles was not impeded. The respective positions were well publicized, and the world community was made aware of the nature of the American claim.

The United States, concurrently, with its bilateral negotiations with the Soviets during 1958, presented space claims to the United Nations. Here, the Soviets again, at first, sought to prevent consideration of the subject by linking the peaceful uses of outer space with their policies respecting the overseas military bases of the NATO nations.

It now becomes necessary to analyze the reception accorded in the forum of the United Nations to the demands of many states that outer space be used freely for peaceful, i.e., nonaggressive and beneficial, purposes.

(2) *Deliberations at the United Nations*

The United Nations became a forum for the consideration of claims for the establishment of principles and rules of law for outer space as early as 1957.²⁰⁴ The discourse which was begun at the United Nations permitted the two major resource nations, together with the other members of the world community, to enunciate space policies and legal goals. As a result of such negotiations committees were created, and reports, recommendations, and resolutions have been prepared and adopted. Proposed statements of principle and draft

²⁰² Dulles, "The Challenge of Change," *ibid.*, 1037 (1958).

²⁰³ Eisenhower. "The State of the Union," 40 *Department of State Bulletin* 116 (1959).

²⁰⁴ See *supra*, p. 34, and Annex 6, pp. 455-456.

technical agreements have been submitted, and there has been a general clarification of legal rights and duties. At the same time that the United Nations became the major forum for the discussion of space problems, nations continued their bilateral discussions and other international organizations were called upon to share in the responsibility of working out practical solutions to special problems. The problems of disarmament and the testing of nuclear weapons particularly were impressed upon space negotiations. An analysis of the legal impact of the different actions taken, including the adoption of General Assembly resolutions and recommendations will follow.

The United States, during the IGY, submitted a memorandum to the First Committee of the General Assembly asking it to take into account the presence and capabilities of space devices in outer space. On January 12, 1957, the United States proposed as a first step that the United Nations should work toward "the objective of assuring that future developments in outer space would be devoted *exclusively to peaceful and scientific purposes* * * * [and that this might be accomplished by] the testing of such objects under international inspection and participation."²⁰⁵ On November 14, 1957, the General Assembly adopted Resolution 1148 (XII) which urged that a disarmament agreement ought to make provision for the "joint study of an inspection system designed to ensure that the sending of objects through outer space shall be exclusively for peaceful and scientific purposes."²⁰⁶

On March 15, 1958, the Soviet Union deposited with the Secretary-General a proposed agenda item for consideration during the 1958 session of the General Assembly. This proposal linked the "banning of the use of cosmic space for military purposes, the elimination of foreign bases on the territories of other countries, and international co-operation in the study of cosmic space."²⁰⁷ The United States on September 2, 1958, also proposed that the Assembly's agenda include an inquiry on "international co-operation in the field of outer space."²⁰⁸ This was followed by Secretary of State Dulles' proposal to the General Assembly on September 18, 1958, that it establish

²⁰⁵ II *Documents on Disarmament*, 1945-1959 733 (1960), (Italics added).

²⁰⁶ *Ibid.*, 901-902; Annex 6, *infra*, p. 455.

²⁰⁷ U.N. Doc. A/3818; II *Documents on Disarmament*, 1945-1959 976; *Legal Problems of Space Exploration*, *supra* note 10. Chapter I, at 994. Compare Taubenfeld, "Consideration at the United Nations of the Status of Outer Space," 53 *A.J.I.L.* 400 (1959).

²⁰⁸ U.N. Doc. A/3902; Ambassador Lodge filed an explanatory memorandum with the request. *Legal Problems of Space Exploration*, *supra*, note 10, Chapter I, at 996-997. Annex 11, *infra*, p. 460.

an Ad Hoc Committee "to prepare for a fruitful program on international cooperation in the peaceful uses of outer space."²⁰⁹ Secretary Dulles explained his proposal as being in the interest of humanity since it would maximize the constructive and beneficial uses of space.

The General Assembly under the agenda title of "Question of Peaceful Use of Outer Space" referred the matter to the First Committee which engaged in extended maneuverings in meetings conducted from November 11 to November 24, including the discussion of United States²¹⁰ and Soviet²¹¹ draft proposals. In addition to the substantive problem of the peaceful uses of outer space there was at issue the Soviet effort to force a consideration of overseas bases and the composition of the proposed Ad Hoc Committee.

By November 28, the original United States proposals, which at this time had come to be known as the 20-power draft, were approved by the First Committee by a vote of 54 to 9 (members of the Soviet bloc), with 18 abstentions.²¹² The subject was then referred to the General Assembly and was adopted on December 13, 1958, as Resolution 1348 (XIII).²¹³ The Resolution stressed the need for "international and scientific cooperation in the peaceful uses of outer space," and that "*outer space should be used for peaceful purposes only.*"²¹⁴ It required the Ad Hoc Committee to prepare a substantial report on space problems including "The nature of legal problems which may arise in the carrying out of programmes to explore outer space."²¹⁵

The debates in the First Committee ranged widely over many subjects including the problem of security, the possibility of establishing boundaries between airspace and outer space, whether space might be acquired by states, the extension of sovereignty into space, and jurisdiction over events in space. Curiously, few delegates urged that nations were entitled to free and equal rights to the use of outer space, although the Swedish representative stressed the need for free use of space for peaceful traffic as in the case of the high seas.²¹⁶ The Dutch delegate advanced a position which now has come to be gener-

²⁰⁹ 39 *Department of State Bulletin* 529 (1958); *Legal Problems of Space Exploration*, *supra* note 10, Chapter I, at 997.

²¹⁰ U.N. Doc. A/C.1/L.220 and U.N. Doc. A/C.1/L.220 Rev. 1.

²¹¹ U.N. Doc. A/C.1/L.219 and U.N. Doc. A/C.1/L.219 Rev. 1.

²¹² U.N. Doc. A/4009.

²¹³ II *Documents on Disarmament*, 1305 (1945-1959); *Legal Problems of Space Exploration*, *supra* note 10, Chapter 1, at 1000. Annex 7, *infra*, pp. 456-458.

²¹⁴ *Ibid.* (Italics added.)

²¹⁵ *Ibid.*

²¹⁶ U.N. Doc. A/C.1/SR.984.

ally accepted, namely, that "the general principles of law recognized by civilized nations" as contained in the Statute of the International Court of Justice and the U.N. Charter were applicable to outer space.²¹⁷

The discussions supported the general proposition that outer space should be used for peaceful purposes only. However, no definition was established as to the meaning of "peaceful purposes," and the Soviet delegate, Zorin, and the American delegate, Senator Lyndon B. Johnson, while agreeing "to the need for the peaceful exploitation of man's new capabilities in outer space for the benefit of all mankind * * *" failed to take "a position on the potential legal status of space and neither in fact stated a position which would estop future claims from being made."²¹⁸ The two constructive results of the discussions in the UN and the Resolution of December 13, 1958, were the emphasis placed on the cooperative use of outer space for peaceful purposes and the decision to prepare through the Ad Hoc Committee a detailed report on the peaceful uses of outer space.

The twenty-seven page report, which was submitted to the General Assembly on July 14, 1959, constituted a superb analysis of the myriad of political, legal, and scientific problems created by man's entry into outer space. In addressing itself to the legal problems likely to arise in the exploration of outer space the committee rightly concluded that an effort at the comprehensive codification of space law would be premature, but, nonetheless, "recognized the need both to take timely, constructive action and to make the law of space responsive to the facts of space."²¹⁹

The report set forth some six legal problems which were considered susceptible of priority treatment, and also mentioned five other problems of lesser immediate legal significance. These problems are presently at the very heart of the discussions on the emerging law of outer space. The issues singled out for priority consideration were: freedom of outer space for exploration and use, liability for injury or damage caused by space vehicles, allocation of radio frequencies, avoidance of interference between space vehicles and aircraft, identification and registration of space vehicles and co-ordination of

²¹⁷ U.N. Doc. A/C.1/SR.987.

²¹⁸ Taubenfeld, *supra* note 207, at 404. *Annual Report of the Secretary-General on the Work of the Organization, 16 June 1958–15 June 1959, General Assembly, U.N. Doc. A/4132.*

²¹⁹ U.N. Doc. A/4141, p. 1268; *Legal Problems of Space Exploration, supra* note 10, Chapter I, 1246–1274; Annex 20, *infra*, pp. 472–480. Compare, Jessup and Taubenfeld, "The United Nations *Ad Hoc* Committee on the Peaceful Uses of Outer Space," 53 *A.J.I.L.* 877–881 (1959).

launchings, and re-entry and landing of space vehicles. The less pressing problems included the question of determining where outer space begins, protection of public health and safety, safeguards against contamination of or from outer space, questions relating to the exploration of celestial bodies, avoidance of interference among space vehicles, and other technical matters such as the means of achieving maximum effectiveness of meteorological activities in outer space.²²⁰

The report contained a reference to the role of customary law, particularly as related to the yet unsolved problem of where outer space begins, and it was suggested that additional experience might enable states to view the subject of space not so much from the point of view of sovereignty as from the viewpoint of uses. Thus, the report suggested that "further experience might suggest a different approach, namely, the desirability of basing the legal régime governing outer space activities primarily on the nature and type of particular space activities."²²¹ The acceptance in recent years of the rule that outer space was to be employed for peaceful, i.e., nonaggressive and beneficial, purposes has largely proven the perceptiveness of this portion of the committee report.

The United States in September, 1959, through Secretary of State Herter, called to the attention of the General Assembly the hope that outer space would be used exclusively for peaceful purposes. In demonstrating the relationship between space and disarmament he said on September 17, 1959, that because "progress in disarmament might be slow, * * * the United States has urged that peaceful uses of outer space be considered as a separate step toward constructive change."²²² He added that there could be "no more dramatic illustration of a spirit of cooperation in the world today as we stand at the threshold of the space age than for this Assembly to act unanimously in this field. This would be a major step forward in the process of peaceful change."²²³

During the following months the First Committee of the General Assembly considered the Report and worked out a plan for the establishment of a new committee. On December 12, 1959, the General Assembly unanimously adopted the Committee's action in the form of a resolution entitled "International Co-operation in the Peaceful Uses of Outer Space," 1472 (XIV).²²⁴

²²⁰ *Ibid.*, 1268-1270; Annex 20, *infra*, pp. 472-480.

²²¹ *Ibid.*, 1270; Annex 20, *infra*, pp. 472-480

²²² Herter, "Peaceful Change," 41 *Department of State Bulletin* 472 (1959).

²²³ *Ibid.*, 473.

²²⁴ U.N. Doc. A/4354; *Legal Problems of Space Exploration*, *supra* note 10, Chapter I, at 1274-1275; Annex 1, *infra*, pp. 441-443.

The Resolution placed strong emphasis upon the use of outer space for peaceful purposes. It called for international cooperation, the exchange of experiences, and the exploration and exploitation of outer space for such purposes. The Resolution, therefore, continued the precedent fixed in 1957 that outer space be reserved for peaceful purposes. During a time plagued with the tensions incident to disarmament considerations, the Resolution took into account the benefits derived and the usages which matured during the IGY. It authorized the new committee to embark upon a study of the "nature of legal problems which may arise from the exploration of outer space."²²⁵

The Committee on the Peaceful Uses of Outer Space was dormant—in part because of procedural disagreements—not meeting from its creation until November 1961. During this period the United States, through President Eisenhower's address to the General Assembly on September 22, 1960, disclosed concern that the problem was being neglected. Thus, he stated at the U.N.:

Another problem confronting us involves outer space.

The emergence of this new world poses a vital issue: Will outer space be preserved for peaceful use and developed for the benefit of mankind? Or will it become another focus for the arms race—and thus an area of dangerous and sterile competition.

The choice is urgent. And it is ours to make. * * * National vested interests have not yet been developed in space or in celestial bodies. Barriers to agreement are now lower than they will ever be again. * * *

I propose that:

1. We agree that celestial bodies are not subject to national appropriation by any claims of sovereignty.

2. We agree that the nations of the world shall not engage in warlike activities on these bodies.

3. *We agree, subject to appropriate verification, that no nation will put into orbit or station in outer space weapons of mass destruction.* All launchings of space craft should be verified in advance by the United Nations.

4. We press forward with a program of international cooperation for constructive peaceful uses of outer space under the United Nations. Better weather forecasting, improved worldwide communications, and more effective exploration not only of

²²⁵ *Ibid.*

outer space but of our own earth—these are but a few of the benefits of such cooperation.²²⁶

This forceful precedent was shared by President Kennedy when he spoke to the General Assembly on September 25, 1961. He stated:

As we extend the rule of law on earth, so must we also extend it to man's new domain: outer space.

All of us salute the brave cosmonauts of the Soviet Union. The new horizons of outer space must not be driven by the old bitter concepts of imperialism and sovereign claims. The cold reaches of the universe must not become the new arena of an even colder war.

To this end, we shall urge proposals extending the United Nations Charter to the limits of man's exploration in the Universe, reserving outer space for peaceful use, *prohibiting weapons of mass destruction in space or on celestial bodies*, and opening the mysteries and benefits of space to every nation. We shall further propose cooperative efforts between all nations in weather prediction and eventually in weather control. We shall propose, finally, a global system of communications satellites linking the whole world in telegraph and telephone and radio and television. The day need not be far away when such a system will televise the proceedings of this body to every corner of the world for the benefit of peace.²²⁷

When the First Committee began in October 1961 to discuss the order to be assigned to the discussion of agenda items, it soon became evident that a substantial number of countries wished to assign a high priority to the subject of the peaceful uses of outer space. At the 1170th meeting of the Committee on October 19, the United Kingdom, Thailand, Guinea, Afghanistan, and Libya urged an early discussion of the subject. The Soviet Union, and its satellites, however, sought to delay a consideration of the subject.²²⁸

The Committee on the Peaceful Uses of Outer Space having submitted a short report to the First Committee on November 27, 1961,²²⁹ and the governments of Australia, Canada, Italy, and the United

²²⁶ "President Eisenhower Addresses U.N. General Assembly," 43 *Department of State Bulletin* 554-555 (1960) (Italics added); *Legal Problems of Space Exploration*, *supra* note 10, Chapter I, at 1009.

²²⁷ "Let Us Call a Truce to Terror," 44 *Department of State Bulletin* 622 (1961). (Italics added.)

²²⁸ U.N. Doc. *Official Records of the General Assembly, Sixteenth Session, First Committee*, 37-39 (1961); U.N. Doc. A/C.1/SR.1170.

²²⁹ U.N. Doc. A/4987.

States having prepared a four-nation draft resolution on December 2, 1961,²³⁰ the First Committee initiated debate on December 4.²³¹ In addition to the foregoing documents they took into account a letter dated November 14, 1961, addressed by the representative of the Soviet Union to the Secretary-General.²³² The operative language of the four-nation draft resolution, so far as the proposal dealt with legal principles, provided that the General Assembly:

1. *Commends to States for their guidance in the exploration and use of outer space the following principles:*

(a) International law, including the Charter of the United Nations, applies to outer space and celestial bodies;

(b) Outer space and celestial bodies are free for exploration and use by all States in conformity with international law, and are not subject to national appropriations by *claim of sovereignty or otherwise.*²³³

A revision of this draft proposal was submitted to the First Committee on December 11, 1961, by all four of the original proponents, plus twenty additional states, including the Soviet Union.²³⁴ The only change made with respect to legal principles, part "A" of the proposal, was to eliminate the letter "s" and the six words which are underscored above. As revised the proposed General Assembly resolution was approved unanimously by the First Committee on December 11, 1961.²³⁵ It was then adopted unanimously by the General Assembly on December 20, 1961, as Resolution 1721 (XVI).²³⁶

The debates in the First Committee disclose no stated reason for eliminating the reference to "s by claim of sovereignty or otherwise." The terms appear to be redundant when considered in relation to the retained terminology. Perhaps they were dropped for reasons of style. Their presence added nothing, nor did their absence affect legal rights.

The importance of the two provisions adopted requires reference to the meaning attributed to them during the discussions at the First Committee. Speaking in support of the unamended four-nation proposal Ambassador Stevenson stated on December 4, 1961, that draft resolution "A" contemplated a system of law and order in outer

²³⁰ U.N. Doc. A/C.1/L.301.

²³¹ U.N. Doc. A/C.1/SR.1210.

²³² U.N. Doc. A/C.1/857.

²³³ U.N. Doc. A/C.1/L.301. (Italics added.)

²³⁴ U.N. Doc. A/C.1/L.301/Rev. 1 and Rev. 1/Corr. 1.

²³⁵ U.N. Doc. A/C./SR.1214.

²³⁶ U.N. Doc. A/5100, 6-7; 9 U.N. Review 56-57 (January 1962); Annex 2, *infra* pp. 443-446.

space which would be beneficial to all states, the large and small alike. He expressed the hope that space exploration would not become a contest between nations, that ideological quarrels would not affect other planets, and that all nations would engage cooperatively in the allocation of radio frequencies for space communications and in global systems of weather prediction. In his view:

The first principle was that international law, including the Charter of the United Nations, applied to outer space and celestial bodies. In that connection, he pointed out that the *Ad Hoc* Committee on the Peaceful Uses of Outer Space had observed in its report of 14 July 1959 (A/4141) that, as a matter of principle, the United Nations Charter and the Statute of the International Court of Justice were not limited in their operation to the confines of the earth.

The second principle was that outer space and celestial bodies were free for exploration and use by all States, and were not subject to national appropriation. Freedom of space and of celestial bodies, like freedom of the seas, would serve the interests of all nations; man should be free to venture into space without any restraints except those imposed by the laws of his own nation and by international law, including the United Nations Charter. That principle also had been recognized in the report of the *Ad Hoc* Committee and had since then been confirmed by the practice of States.²³⁷

He then added that the time had not arrived when the limits of outer space could be fixed. The boundary "between air space and outer space could be drawn only after further experience, and by consensus of opinion among nations."²³⁸

All of the other speakers approved the terms of the draft resolution "A," and there were no criticisms of this proposal. The proponents made it clear that part "A" of the resolution, as well as the remaining elements consisting of "B" through "E," dealt exclusively with the peaceful uses of outer space, and that the separate military questions of space should be considered in the context of disarmament negotiations. Thus, a representative view was that of the Canadian delegate who stated "the Committee was not now dealing with the military aspects of the question; its objective should be to ensure the use of space for *peaceful purposes only*, by fostering international co-operation in all phases of space exploration."²³⁹

²³⁷ U.N. Doc. A/C.1/SR.1210.

²³⁸ *Ibid.*

²³⁹ U.N. Doc. A/C.1/SR.1210, 247. (Italics added.)

The delegates in discussing the draft proposal "A" found occasion to consider the impact of a declaration of legal principles upon the whole regime of outer space. Sir Patrick Dean of the United Kingdom summed up this as follows: "It was of great importance that a satisfactory legal régime should be established for outer space and the celestial bodies. Such a régime, however, must be established step by step; a comprehensive code of law for outer space was not yet practicable or desirable. However, certain broad legal principles could be laid down and should be regarded as injunctions of great weight and as useful steps towards such a legal régime."²⁴⁰

Several delegates stated that the principles set forth in the second paragraph of the proposed draft resolution "A" had already been generally accepted by states. This was the view of the delegates of Australia, Italy, Peru, Poland, Sweden, and Spain. They based this conclusion on the fact that "no country had objected to the orbiting of space vehicles over its territory either during or since the International Geophysical Year."²⁴¹

The Spanish delegate, along with several others, however, considered that the first principle contained in draft resolution "A" was creative rather than declaratory in nature. Thus, Mr. De Lequerica indicated that since it was too early to settle all legal problems affecting outer space the sponsors of the draft resolution had acted properly in confining themselves "to laying down the principle that international law applied to outer space and celestial bodies * * *."²⁴² This, of course, runs counter to the general view that international law applied in outer space absent the resolution.

The Japanese delegate, failing to weigh the post-1957 experience in space, expressed the hope that "certain general principles should be established as soon as possible * * *" and indicated that one "such principle was that outer space must be used for *peaceful purposes alone*."²⁴³ He stressed the need for the banning of outer space for "military" purposes as soon as possible. The Greek delegate's remarks indicate his belief that the adoption of the draft resolution "A" would be creative rather than declaratory.²⁴⁴

The only views which might be construed as critical of the substance of part "A" of the resolution were expressed by the Indian

²⁴⁰ *Ibid.*, 249.

²⁴¹ U.N. Doc. A/C.1/SR.1213, 264. The Iranian delegate after mentioning that no state objected to the free orbiting of satellites indicated that this seemed to be a tacit acknowledgment that "territorial sovereignty did not extend beyond air space." *Ibid.*

²⁴² *Ibid.*

²⁴³ U.N. Doc. A/C.1/SR.1212, 258. (Italics added.)

²⁴⁴ U.N. Doc. A/C.1/SR.1213, 265.

delegate. He stated that his delegation had no objection to the proposal and then said "He agreed with the principles proclaimed in operative paragraph 1 of draft resolution A, but he felt that the basic concepts of international law might perhaps be too limited for outer space, where the concepts of nationality and sovereignty would be out of place."²⁴⁵

When the revised draft was presented to the First Committee only eight delegates debated its adoption, and not all made reference to resolution "A." Mr. Yost, speaking for the United States, stated that the "revised text gave formal recognition to two fundamental legal principles on which the Committee should base itself in examining legal problems which might arise from the exploration and use of outer space."²⁴⁶ The British delegate stated that resolution "A" had "enunciated" legal principles relating to the peaceful uses of outer space, and hoped that within the framework of the disarmament program it would be possible to establish controls so as to "limit the use of outer space to *peaceful purposes only.*"²⁴⁷ The Soviet delegate indicated that the resolution "enunciated certain legal principles for the guidance of States in the exploration and use of outer space * * *."²⁴⁸ The French delegate stated that while it was "certainly proper to declare that international law, including the Charter of the United Nations, applied to outer space and celestial bodies * * *" he found merit in the cautious way in which the second part of resolution "A" sought to avoid the making of precise recommendations.²⁴⁹ Thereupon, the chairman, finding no objections within the committee stated that the resolution would be considered as having been adopted unanimously. It was subsequently adopted unanimously and without amendment by the General Assembly as Resolution 1721 (XVI) on December 20, 1961.²⁵⁰

Several important facts resulted from these discussions on the law of outer space. The Resolution was adopted unanimously and without reservations. Second, it stressed the existence of a legal regime for space. Third, it emphasized the free use of space rather than a restricted use of space. Fourth, it recognized the common interest of mankind in furthering the peaceful uses of outer space, and thereby raised important questions as to the differences, if any, between peaceful and military uses. Although the entire resolution

²⁴⁵ *Ibid.*

²⁴⁶ U.N. Doc. A/C.1/SR.1214, 267. (Italics added.)

²⁴⁷ *Ibid.*, 268. (Italics added.)

²⁴⁸ *Ibid.*

²⁴⁹ *Ibid.*

²⁵⁰ U.N. Doc. A/5100, 6-7; 56 A.J.I.L. 946-949 (1962); Annex 2, *infra*, pp. 443-446.

did not forbid the use of outer space for military purposes, it is correct to say that the participants, when employing the term "military," were not suggesting or implying that space could not be used for peaceful, i.e., nonaggressive and beneficial military purposes. The participants in 1961 were using the term "military" as meaning aggressive military purposes. Thus, one of the major contributions of the discussions and of the resolution was to help clarify the term peaceful uses to include nonaggressive military purposes. The agreement that space might be used freely for exploration did not suggest that in the course thereof states might endanger the peace and security of other states.²⁵¹ The Committee did not endeavor to delineate examples of aggressive and nonaggressive uses, although the Hungarian delegate on one occasion characterized Midas and Samos satellites as engaged in military espionage and declared the West Ford experiment to be a "military project."²⁵²

The efforts to arrive at suitable distinctions between aggressive military and nonaggressive military functions is a continuing one.²⁵³ Probably of greatest importance, however, was the demonstration, following a long period of Soviet intransigence, that the two resource nations could come to some kind of explicit agreement relating to the uses of outer space. This, in turn, led to the possibility that the United Nations might serve as a continuing forum for considering the claims of all nations relating to outer space.

Resolution 1721 (XVI) is important to the international law of outer space for several reasons. First, a unanimous resolution of the General Assembly provides a convenient means for the promulgation of legal principles. Second, the principles so enunciated may be extended and refined through the subsequent acceptance of more detailed legal rules. Third, such resolutions may be easier of adoption than formal treaties, in that such resolutions may avoid the psychological appearance of permanent commitments. Fourth, they may not only be as practical as treaties, but they may also avoid the constitutional problems which may confront some nation-states. Thus, the internationally sponsored resolution, like customary law, may be distributive of international legal rights and duties resulting from claims advanced in the international forum. The substance of principles which have been put forward as international resolutions have been referred to by Schachter as "soft" law as opposed

²⁵¹ Goedhuis, "Some Trends in the Political and Legal Thinking on the Conquest of Space," 9 *Netherlands International Law Review* 128 (1962).

²⁵² U.N. Doc. A/C.1/SR.1212, 260. See *infra*, pp. 302-304, 314, 404.

²⁵³ *Infra*, pp. 244-246, 265-277, 292-293.

to the "hard" law of treaties. The form in which the law is promulgated is less important than the fact that some resolutions of the General Assembly, like explicit international agreements, do have legal force and significance.

The content of international resolutions may be vague, but it may also be specific. The United States delegate to the Committee on the Peaceful Uses of Outer Space on March 19, 1962, told that body that the terms of Resolution 1721 (XVI) were both practical and specific. He stated:

We should proceed in this area with the recognition that the task of the organized international community is to develop principles and standards which are sufficiently realistic and specific to have an impact on international practice and which are not so grandiose or elaborate as to be impractical and therefore ignored.

The practical and specific principles, which were unanimously approved by the Assembly in Part A of General Assembly Resolution 1721 (XVI), form the basic foundation of a legal regime for outer space. They represent a forward-looking expression by the Assembly that outer space is indeed the province of all mankind. They are practical in the sense that the enlightened self-interest of all States should lead to compliance with them.²⁵⁴ He concluded that the United Nations was capable of playing an important role by way of the resolution passing process in developing principles for the guidance of states in the peaceful uses of outer space. On such foundations the United Nations has been the forum for the consideration of more detailed legal rules.

The practical use of resolutions was noted by the representative of the United Kingdom at the meeting of the legal subcommittee of the Committee on the Peaceful Uses of Outer Space on April 17, 1963. Miss Gutteridge of the British Foreign Office legal staff pointed out that a unanimous resolution of the General Assembly "would be

²⁵⁴ U.N. Doc. A/AC.105/PV.2, 33-35. On April 22, 1963, the Italian delegate told the legal sub-committee that binding legal principles might be expressed in the form of a UN resolution. He said "In international law, rules were binding primarily because States considered themselves bound by such rules, whatever their origin. From that viewpoint recommendations of the General Assembly undoubtedly had binding force." Compare Tammes, *Decisions of International Organizations as a Source of International Law*, 94 Recueil des Cours 261 (1958); Virally, *La Valeur Juridique des Recommendations des Organisations Internationales*, 2 Annuaire Francais de Droit International 66 (1956).

most authoritative and would have some advantages over an agreement in view of the possibility that all States might not accede to an agreement or that delays in ratification or failure to ratify might considerably reduce its scope.”²⁵⁵ It was her view that the adoption of such a resolution on such a specific matter as space vehicle liability or the right of a nation-state to the return of its astronauts from foreign areas might usefully precede the conclusion of explicit international agreements.

Substantial authority exists in support of the view that the unanimous resolution of an almost universal international organization, such as the United Nations, is both authoritative and also, depending on the language used, may be relied upon as the basis of legal rights and duties. Such resolution, of course, can be creative of new rights and duties, and it may also simply restate or promulgate existing rights and duties. As noted above, Resolution 1721 (XVI), in the views of many, merely summarized in written form pre-existing customary law and therefore was promulgative rather than creative. Just as there have been no official protests by states respecting the practice of orbiting space vehicles in outer space, there have been no official protests concerning the force and validity of the resolution. This is true even though the resolution, like any other written legal document, is potentially subject to differing viewpoints and interpretations.

It is not possible to develop at length the fact that a unanimous resolution of the United Nations possesses legal force. Starke has analyzed the relationship between customary international law and General Assembly resolutions. He has written that such resolutions or comparable organizational decisions “may represent intermediate or final steps in the evolution of customary law.”²⁵⁶ He also holds that a “Resolution or decision may suffice to create a precedent for future actions.”²⁵⁷ This is true because the context in which a resolution has been prepared, as well as its specific language, may affect its legal status.

Two basic tests have been put forward by Sloan. He has observed that:

²⁵⁵ U.N. Doc. A/AC.105/C.2/SR.20, 7.

²⁵⁶ Starke, *An Introduction to International Law* 35 (3d ed. 1954).

²⁵⁷ *Ibid.*, at footnote 3. However, where a UN resolution does not have the approval of a major member, such as the United States, it “does not necessarily bind the members. It is evidence of public opinion which may or may not ripen into custom or be set forth in a treaty.” II *International Law*, Department of the Army Pamphlet 27-161-2 43, fn. 32 (1962).

The first concerns the authority or competence of the General Assembly in regard to the subject-matter, to the addressee, and to the contemplated action or decision. The second concerns the intention of the General Assembly in adopting a given resolution, for even where a body may be competent to make a binding decision it may voluntarily limit its action to something less.²⁵⁸

Resolution 1721 (XVI) refers to states as the subject of its terms, and seeks to prescribe certain of their activities. It deals with non-governmental as well as governmental bodies. It makes provision for the submission of information respecting space launches, and it calls for the submission of a variety of reports. Two members of the United Nations, beginning with the report of March 5, 1962, submitted by the United States, have registered launches of vehicles going into orbit and beyond. Such registrations have been based on the terms contained in the resolution. Many nation-states, as well as public and private international organizations, have continually made reports to the United Nations respecting their space activities. Such reports have also been based on the terms contained in the resolution. The whole history of the resolution coupled with unvarying national efforts to comply with its terms clearly suggests the conclusion that it possesses legal as well as moral and political force. States have been acting in conformity with it from a sense of obligation, which is one of the basic tests in ascertaining the legal character of a resolution in international law.²⁵⁹ The United Nations, of course, is free to ascribe whatever meaning it wishes to a resolution, and it is noteworthy that part "A" by its terms commends or enunciates "principles" respecting the space activities of states. In the entire context they can be regarded only as promulgated legal principles, and, as such, can be meaningful only if they are regarded as binding on states. Secretary of State Rusk has referred to the principles contained in Part "A" as "presently the law; the unanimous action of the General Assembly in adopting the resolution, as

²⁵⁸ Sloan, "The Binding Force of a 'Recommendation' of the General Assembly of the United Nations," 25 *Brit. Yb. Int'l L.* 3 (1948). Some resolutions of the General Assembly have been described as not "binding on member States." When resolutions have been cast in "the form of a declaration * * * particular weight" is accorded a resolution. Schwebel, "The Story of the U.N.'s Declaration of Permanent Sovereignty Over Natural Resources," 49 *A.B.A.J.* 469 (1963).

²⁵⁹ *Ibid.*, 2.

action by the governments of the world assembled, confirms this view."²⁶⁰

The unanimity of the Assembly action necessarily affects the distinction between the moral, political, or legal effect of a resolution. Johnson has concluded a careful study of the force of such resolutions by stating "There is also nothing to prevent Members incurring binding legal obligations by the act of voting for Resolutions of the General Assembly, provided there is a clear intention to be so bound * * *. Their value * * * depends upon the extent to which they can be regarded as expressions of the 'juridical conscience' of humanity as a whole rather than of an incongruous or ephemeral political majority."²⁶¹ Further, it is well known that the general role of the General Assembly has been considerably expanded over the years since 1945. The applicability and force of its resolutions have grown with its own added significance. Writers who deny that such resolutions are formally binding often admit that "they have great persuasive value."²⁶² Where, however, the General Assembly unanimously promulgates principles which reflect a consensus of practice which has emerged as customary international law, there is no difficulty in asserting that such a resolution and its contents constitute legal injunctions of great weight.

With the submission of specific and general proposals to the United Nations relating to the peaceful uses of outer space, questions have arisen as to the form which such proposals should take. In addition to the resolutions already adopted by the General Assembly, proposals have been put forward entitled recommendations, resolutions, declarations, codes, international agreements, and simply, draft proposals. The documents bearing these titles have concentrated on so-called "basic principles" and also upon detailed rules for a specific type of situation.

The delegates to the United Nations have endeavored to reach some kind of consensus as to the legal implications involved in the selection of such terms. In doing so they have been governed by their views as to the substantive law to be contained in such documents, as well as by general political considerations, including bargaining advantage. The choice of form has also been affected by the

²⁶⁰ Rusk, *supra* note 164, at 318. Compare Plimpton, *U.N. Doc. A/AC.105/PV.2*, 13-15, where he states that the General Assembly Resolution "rejected the concept of national sovereignty in outer space." Also, Gore, *U.N. Doc. A/C.1/PV.1289*, 21.

²⁶¹ Johnson, "The Effect of Resolutions of the General Assembly of the United Nations, 32 *Brit. Yb Int'l. L.* 121-122 (1955-1956).

²⁶² Abi-Saab, *supra* note 117, at 109.

fact that not all delegates have a clear understanding of the legal differences between principles and rules as noticed at the beginning of this Chapter. The delegates have recognized that Resolution 1721 (XVI) sets forth general legal principles. They have also recognized the need to recite additional and clarifying principles and at the same time to achieve agreement on specific rules.

The 1962-1963 discussions relating to form have centered on the differences, if any, between recommendations, resolutions, declarations, and explicit international agreements (treaties, codes, or conventions) proposed or sponsored at the U.N. There was not entire agreement by the delegates that the form should be determined by the subject matter, in view of the fact that there was not complete agreement as to the legal differences between differing forms. The central problem was put forth in the Soviet representative's remarks before the First Committee in 1962. He said that "there is no need to prove in detail that the draft declaration * * * would be a document obliging States to adhere strictly to its provisions. There is no need to prove that the resolution of the General Assembly—any resolution of the General Assembly according to the Charter—is only a recommendation which has no legally compulsive character."²⁶³ During 1963 the debates in the legal subcommittee reflected several approaches as to form. Broadly speaking, the Soviet bloc, because of its well known antipathy toward the role of general customary international law, has sought a highly formal expression of space law principles and rules. This has resulted in favor for international treaties or conventions and for signed declarations. The Soviet preoccupation with the view that only explicit written agreements can serve as a source of international law—despite their affirmative votes on Resolutions 1721 (XVI), 1802 (XVII), and 1962 (XVIII)—has been demonstrated in the debates of the legal subcommittee. In discussing outer space the Soviet delegate has argued that a state might hinder the use of outer space by another state for peaceful purposes because "the principle that there must be [explicit written] agreement on activities affecting the interests of other countries was widely recognized in international law, witness the many bilateral and other agreements concerning the regime of international waters."²⁶⁴ Of course, the Convention on the High Seas, taking into account customary international law, is "generally declaratory of established principles of international law."²⁶⁵ On

²⁶³ U.N. Doc. A/C.1/PV.1289, 51.

²⁶⁴ U.N. Doc. A/AC.105/C.2/SR.28, 12-13.

²⁶⁵ U.N. Doc. A/CONF. 13/L/53 and corr. 1.

another occasion the Soviet delegate suggested there would have been no need for the legal subcommittee if custom were regarded as a reliable source of international law.²⁶⁶ However, the Soviet bloc has not denied the fact that customary international law does exist.

The United States in particular, with broad support, has favored the use of unanimous resolutions of the General Assembly as a means to ratify or promulgate international legal principles. It has displayed some concern lest basic principles set down in Resolution 1721 (XVI) might suffer from erosion or unintentional modification in the course of adding to and extending such principles.²⁶⁷

There has also been concern lest the establishment of rules intended to render existing basic principles more specific should not, in fact, depart from such principles. The Soviet delegate on May 7, 1962, told the Committee on Peaceful Uses of Outer Space that the adoption of the General Assembly Resolution 1721 (XVI) constituted the approval of "certain general principles which should guide the States in their outer space operations * * *"²⁶⁸ Although this resolution only commended certain principles to member states, such principles according to the United States government "constitute the basis of a universally accepted charter for outer space."²⁶⁹

Soviet bloc states in seeking to argue the need of stating legal principles in the form of a Declaration of the United Nations, preferably signed by governments, have endeavored to cast some doubt on the fact that a unanimous resolution of the General Assembly is generally considered to constitute—if so intended—operative international law. Thus, the Romanian delegate told the legal subcommittee on April 18, 1963, that if principles, which he preferred to rules, "were embodied in a General Assembly resolution, there was no certainty that they would be implemented. Numerous precedents from United Nations experience confirmed such a view. The best solution would be to draw up a declaration which would be signed by Governments and would have the legal force of an international agreement."²⁷⁰ The Polish delegate told the committee much the same on April 23, 1963. It was his view that although Resolution 1721 (XVI) "laid down the fundamental principles of international law applicable to outer space * * *. Such resolutions, being merely recommendations without binding force, could not be considered

²⁶⁶ U.N. Doc. A/AC.105/C.2/SR.17, 4. Compare, Tunkin, *supra* note 103, at 419-430.

²⁶⁷ U.N. Doc. A/AC.105/PV.2, 13-15; U.N. Doc. A/C.1/PV.1289, 12.

²⁶⁸ U.N. Doc. A/AC.105/PV.3, 23-25.

²⁶⁹ U.N. Doc. A/C.1/PV.1296, 3-5.

²⁷⁰ U.N. Doc. A/AC.105/C.2/SR.18, 10.

sources of law, although States were undoubtedly correct in attaching particular importance to some of them. It was now for the Sub-committee to translate existing resolutions on the legal aspects of outer space into more binding legal language.”²⁷¹

This argument fails to take into account the fact that Resolution 1721 (XVI) promulgated existing general customary law and the form employed has been frequently used to enunciate legal principles. In his view, practice had demonstrated that resolutions had been less effectively applied than legally binding rules. In supporting the form of a signed declaration he minimized the unwillingness of some states to sign such a document, and urged the conclusion that such declarations, as opposed to resolutions, should be accorded “binding legal force.”²⁷²

The delegate from Lebanon told the subcommittee on April 25, 1963, that a solemn declaration like the Universal Declaration of Human Rights, would have greater authority than an ordinary resolution of the General Assembly in establishing space law principles. In his view, the acceptance of such a declaration would lead the way to a convention or covenant containing such principles and that this form of document might then be recommended by the General Assembly to its members for ratification. However, for more mundane matters, such as liability or return of astronauts, an international agreement subject to ratification was more applicable.²⁷³

The Indian delegate also expressed preference for an agreement in the form of a declaration of general principles rather than a resolution. It was his view that the declaration might be followed by a “convention which would be ratified by States and thus become legally binding.” However, he soon amended this somewhat curious statement by adding “A declaration had great moral force and, when adopted unanimously, was generally accepted as part of international law.”²⁷⁴ His objection to agreement in the form of a resolution was not that it was lacking in legal validity, but that such a document might be somewhat lengthy.

Mr. Meeker, the United States representative, endeavored to clarify the difference between principles and rules in his remarks to the subcommittee on April 24, 1963. He pointed out that while both principles and rules may establish legally binding rights and duties,

²⁷¹ U.N. Doc. A/AC.105/C.2/SR.19, 5.

²⁷² *Ibid.*, 6, citing Hall, *A Treatise on International Law*, sec. 109 (8th ed. 1924).

²⁷³ U.N. Doc. A/AC.105/C.2/SR.21, 10.

²⁷⁴ U.N. Doc. A/AC.105/C.2/SR.22, 10.

principles relate to broad concepts and rules relate to specific concepts, e.g., liability in the event of accidents and assistance and return of astronauts. Only rules are able to deal with detailed provisions relating to such matters as scope of liability, or the procedure for presenting claims, or the forum to resolve the meaning of an agreement. Such matters, in his view, properly ought to be treated in international agreements, treaties, or conventions.

On the other hand, he urged that a resolution of the General Assembly better served the needs of the international community as a vehicle for the declaration of general principles. He pointed out that it was easier and faster to adopt a resolution than to arrive at a formal agreement. The latter process was always subject to uncertainty as to the number of states which would ratify it. He referred to the inconsistency of the Soviet position, in that members of the Soviet bloc had, in 1962, favored the adoption of a General Assembly Resolution containing general principles of international law relating to friendly relations and international cooperation among states.²⁷⁵

Mr. Meeker concluded his analysis of the legal force of different forms by calling attention to the many sources of international law. He stated:

Some delegations had argued that only an international agreement signed by Governments would be legally binding. International agreements were not, however, the only sources of law. As stated in Article 38 of the Statute of the International Court of Justice, judicial decisions, international custom and other sources should also be taken into consideration. When a General Assembly resolution proclaimed principles of international law—as resolution 1721 (XVI) had done—and was adopted unanimously, it represented the law as generally accepted in the international community.²⁷⁶

While it is clear that a unanimous resolution of the United Nations General Assembly may promulgate legal principles having binding force, it is also true that the same result would obtain if the document were entitled “declaration.” This is true whether the declaration is signed or is not signed.

Comparisons between declarations and treaties have sought to make the same distinction that has been attempted between resolu-

²⁷⁵ This is set forth in *U.N. Doc. A/C.6/L.505*.

²⁷⁶ *U.N. Doc. A/AC.105/C.2/SR.20*, 11.

tions and treaties. Thus, the Australian delegate told the First Committee on December 11, 1962, that he thought there was:

* * * common ground that declarations by the General Assembly are not law-making in the sense that a treaty or a convention is, although a declaration universally adopted and adhered to in practice may be valuable evidence of international custom, and hence a most important source of law. The point I make is that general acceptance, both by vote and in practice, is the essential requisite, if a resolution or declaration by the General Assembly is to be valuable in this way as a step in the making of law.”²⁷⁷

Clearly, the juridical form taken by a document may have some legal significance, but it is submitted that participating states may through the appropriate consensus assign whatever legal import they may wish to any of the typical forms. In this connection it must be remembered that general principles have more frequently been found in resolutions and in declarations, or in declarations embodied in resolutions, and that detailed rules have more often been instituted through formal agreements and conventions.

Possibly the best rationale for the Soviet concern for the use of declarations may be found in the statements of their delegate to the First Committee on December 3, 1962. In his view the role of international law is “to regulate the activities of the co-operating parties.”²⁷⁸ Thus, it is, in his view, the function of both principles and rules to achieve this goal, and both may be used to impose sufficiently precise regulations. He then added:

It is indubitable that it is very important to define, first of all, the main principles of this co-operation and then the concrete practical measures which would ensure success for such co-operation and which would prevent the possibility of a misunderstanding, of frictions and of actions that would be prejudicial to the legal rights of any party. That is why the Soviet delegation deems that it is important to adopt a declaration on the main principles of activities of States in the study and use of outer space.²⁷⁹

Such regulation requires binding legal obligations, and so the Soviet argument has asserted that “if Governments really intended to

²⁷⁷ U.N. Doc. A/C.1/PV.1298, 12-13.

²⁷⁸ U.N. Doc. A/C.1/PV.1289, 48-50.

²⁷⁹ *Ibid.*

observe certain principles of conduct in outer space, they would want to see those principles laid down in a declaration having the full force of an international treaty.”²⁸⁰

The delegate from the UAR and the Canadian representative, among others, have also expressed themselves on the propriety of the available forms. According to the former, a decision to employ a declaration or a code depended upon the substance of the proposals.²⁸¹ The latter considered the formulation of principles for the guidance of states to be a solemn task and that since a declaration was a more formal document than a resolution that a declaration was particularly suited to a statement of basic principles. However, for rules, an even more formal procedure was required. In his view, rules had to take the form of binding treaties or conventions.²⁸²

On the basis of the foregoing review of positions advanced by scholars and by representatives at the United Nations, it is clear that international legal rights and duties may be set forth in varying forms. Thus, the international law of outer space, in addition to its customary foundation, may be found in international resolutions, declarations, and formal agreements. The latter may be entitled codes, conventions, treaties, or other suitable expressions. While all may have equal weight as sources of international space law, if so intended, there is a difference in the sense of their formality, with the least formal—but not necessarily less effective—being the unanimous resolution of the General Assembly of the United Nations. More formal is the unanimous declaration of the same body, particularly when subscribed to in writing by all of the members of the United Nations, while most formal is the written agreement which has been subjected to the appropriate constitutional tests within the domestic areas of the numerous signatories. While it is a matter of choice as to which of the foregoing ought to be employed with respect to the principles and rules of international space law, it is clear that states are divided in their preferences as to the means

²⁸⁰ Mr. Fedorenko to the legal subcommittee on April 19, 1963. *U.N. Doc. A/AC.105/C.2/SR.17*, 4. Compare the Polish viewpoint in *U.N. Doc. A/AC.105/C.2/SR.9*, 5 and the Hungarian viewpoint in *U.N. Doc. A/AC.105/C.21/SR.21*, 4.

²⁸¹ *U.N. Doc A/AC.105/C.2/SR.18*, 3.

²⁸² *U.N. Doc. A/AC.105/C.2/SR.21*, 8. The Australian delegate told the subcommittee on April 29, 1963: “A resolution or declaration by the General Assembly, especially if universally adopted and adhered to in practice, might be valuable evidence of international custom, and hence a most important source of law. Nevertheless, a resolution or declaration of the General Assembly was certainly not law-making in the sense that a treaty, convention or declaration formally ratified by Government was.” *U.N. Doc. A/AC.105/C.2/SR.23*, 4.

to establish such general principles. The major choice is between resolutions and declarations. The Soviet bloc constitutes an exception and favors principles being set out in signed declarations and even treaties. On the other hand, it is clear that all states prefer to employ the formal agreement for the delineation of specific rules. However this preference as to form has no inherent legal significance, and, although not at all practical, it would be entirely legal to set out binding rules in the form of a resolution or declaration.

On February 21, 1962, Chairman Khrushchev addressed a conciliatory letter to President Kennedy in order to extend his congratulations to Lieutenant Colonel John H. Glenn on the occasion of his successful space flight. In the letter he offered some hope of reestablishing the space discourse which he had neglected to pursue with President Eisenhower during the Spring of 1958. President Kennedy, in his reply, indicated that the two countries should "cooperate in the exploration of space" and that he would prepare concrete proposals for common action in the hope that a meeting might be arranged between appropriate officers motivated by "a spirit of practical cooperation."²⁸³

On March 7, 1962, President Kennedy again wrote the Soviet Premier listing five specific subjects which he considered within the range of practical cooperation. This letter corresponded with the March 1962 meeting of the U.N. Committee on the Peaceful Uses of Outer Space, and on March 19, the American representative distributed a copy of the letter to the entire committee.²⁸⁴ This was in keeping with the United States policy of presenting its space claims to a forum broader than that of the two resource nations.

The major United States proposals were: first, the joint establishment of an early operational weather satellite system; second, the establishment and operation of a radio tracking station in the Soviet Union employing United States equipment and a similar arrangement in the United States employing Soviet equipment; third, co-operation in mapping the earth's magnetic field in space through the use of two satellites in differing orbits; fourth, cooperation in testing experimental communications by satellite; fifth, the pooling of efforts and exchange of knowledge in the field of space medicine; and, sixth, such other cooperative activities as might prove feasible

²⁸³ "President Kennedy to Chairman Khrushchev," 46 *Department of State Bulletin* 411 (1962).

²⁸⁴ "Letter dated March 7, 1962 from President Kennedy addressed to Chairman Khrushchev," 46 *Department of State Bulletin* 536 (1962); U.N. Doc. A/AC.105/1; 9 *United Nations Review* 37-38 (April 1962).

as the respective space programs of the two nations developed.²⁸⁵ Mr. Kennedy favored the free dissemination of information acquired through such efforts. His proposal included the view that such tasks, costs, and risks might be both minimized and shared.

Premier Khrushchev replied on March 20, 1962, and his response was circulated to the General Assembly of the United Nations on March 21. He conditioned his concrete proposals by stating that he proceeded upon the premise that "all peoples, all mankind, are concerned with the task of exploring outer space and putting it to peaceful uses * * *"²⁸⁶ He then expressed agreement with the Kennedy proposals in four instances, i.e., the latter's first, third, fourth and fifth proposals, and also put forward a series of separate proposals.

He favored cooperative activity regarding international long-distance communications systems. He accepted the concept of co-operation in the field of worldwide weather observation services by means of artificial satellites. He also agreed to cooperate in the preparation of charts of the earth's magnetic field and in the general field of space biology. His proposals suggested that it would be profitable to reach agreement "on the organization of a joint program for making observations by radio and by optical means on objects launched toward the moon, Mars, Venus and other planets in the solar system," and for cooperation in the study of "the physics of interplanetary space and celestial bodies."²⁸⁷ He proposed the drafting and concluding of an international agreement providing for "assistance in search for and recovering space-ships, satellites and capsules which come down to earth by accident."²⁸⁸

Mr. Khruschev referred to the common approach taken at the United Nations when it adopted Resolution 1721 (XVI), and stated that this constituted a sign of progress for the formulation of "the initial principles of space law * * *" and proposed that there was an opportunity to go beyond these fundamentals. He urged the necessity of coming "to an agreement that, in carrying out experiments in outer space, no one should create obstacles to the study and use of space for peaceful purposes by other states. It should, perhaps, be specified that any experiments in outer space which may hinder the exploration of space by other countries should be the subject of preliminary discussion and of an agreement con-

²⁸⁵ *Ibid.*

²⁸⁶ U.N. Doc. A/AC.105/2; 9 *United Nations Review* 38-39 (April 1962).

²⁸⁷ *Ibid.*, 4.

²⁸⁸ *Ibid.*

cluded on a proper international basis."²⁸⁹ He also expressed the hope that through cooperative efforts and attitudes on the subject of outer space it would be possible to derive gains in the field of general and complete disarmament. These exchanges did bear fruit, for they led to negotiation of the Dryden-Blagonravov understanding of June 8, 1962.²⁹⁰

When the inaugural meeting of the expanded U.N. Committee on the Peaceful Uses of Outer Space met in New York on March 19, 1962, the American representative made broad references to the Kennedy letter to the Soviet government and expressed the hope that the Committee would be able to assist in the planning of "peaceful uses of outer space."²⁹¹ He specifically called for international cooperation in the development of common legal doctrines and standards for outer space insofar as that area had become important "for the future growth of international law."²⁹² He commented on the meaning of Resolution 1721 (XVI) saying that the provisions of part "A" had extended the rule of law to outer space, that under the resolution "We have rejected the concept of national sovereignty in outer space," and that since the principles were indeed sound ones that he wished "to re-endorse them heartily on behalf of the United States Government."²⁹³ In his judgment these principles were practical and specific and constituted "the basic foundation of a legal regime for outer space."²⁹⁴ On this foundation the United States then proposed that studies be undertaken on the subject of responsibility for space vehicle accidents and on the subject of "problems arising from the landing, by reason of distress or mistake, of space vehicles in the territory of other States."²⁹⁵ This constituted the first of numerous subsequent efforts to translate the fundamental principles into specific binding rules of international law.²⁹⁶

The remarks of the United States delegate were also notable in two other respects. He stated that practical international space activities should not be carried on by the United Nations, but rather that they should be the product of national programs—involving

²⁸⁹ *Ibid.*, 5.

²⁹⁰ *Infra*, at pp. 230, 275-276. The agreement is set out in Annex 22, *infra* at pp. 482-488.

²⁹¹ U.N. Doc. A/AC.105/PV.2, 9-10; Plimpton, "New Vistas for International Cooperation in the Peaceful Uses of Outer Space," 46 *Department of State Bulletin* 809 (1962).

²⁹² *Ibid.*, 12.

²⁹³ *Ibid.*, 13-15.

²⁹⁴ *Ibid.*, 33-35.

²⁹⁵ *Ibid.*

²⁹⁶ *Infra*, pp. 211-390.

cooperative efforts with other nations—including private activities. He then referred to the legislation pending before the United States Congress calling for the establishment of a Commercial Satellite Corporation which was “intended to be the United States participant in a global system—a truly international arrangement with broad ownership and broad participation.”²⁹⁷ He pointed out that foreign countries would be permitted to cooperate in and to participate in the system which “within this decade will be for point-to-point relay between central installations in different countries, not for direct broadcast into people’s homes.”²⁹⁸ The concept of a private corporation engaging in international communications activities was later to be subject to criticism by the Soviet government.

On March 20, 1962, the Soviet delegate, Mr. Morozov, prior to his receipt of the Khrushchev note of that date, addressed the Committee on the Peaceful Uses of Outer Space. In acknowledging the existence of the principles contained in part “A” of Resolution 1721 (XVI) he stated that they signified “that the activities of the States in outer space research should be conducted in keeping with the recognized principles of peaceful coexistence, sovereignty, equality, non-aggression and non-interference in domestic affairs.”²⁹⁹ This contention, which pursued the uniquely Soviet notion of the guidelines of international law—an emphasis which follows well-known Soviet policy goals—constituted the first of many subsequent Soviet efforts to provide an interpretation of the resolution. In extending his remarks he pointed out that “all States have equal rights to conduct independent research in space * * * [and that] no experiments are permissible in outer space, which might in any way make it difficult for other States to conduct cosmic research and exploration.”³⁰⁰ He referred to these contentions as “principles” although certainly they do not fall within the scope of that word as defined at the beginning of this Chapter,³⁰¹ nor as attested to by usage. It would be better to regard them as unilateral claims to be accepted or rejected by the international community through the customary or formal processes of the law.

Mr. Morozov also put forward the “principle” or claim that no State was entitled to extend its jurisdiction to any part of outer space.³⁰² He also spoke of the need for international agreements

²⁹⁷ Plimpton, *supra*, note 297, at 32.

²⁹⁸ *Ibid.*, 31.

²⁹⁹ U.N. Doc. A/AC.105/PV.3, 23-25.

³⁰⁰ *Ibid.*, 26.

³⁰¹ *Supra*, pp. 124 ff.

³⁰² Morozov, *supra*, note 299, at 26.

on several matters, presumably after the legal subcommittee of the Committee on the Peaceful Uses of Outer Space had been provided an opportunity to draft written agreements. In this category he included first, "assistance in the searching and salvaging of any space ships, sputniks and containers which might have to effect forced landings," second, "provisions which would prohibit such experiments as might obstruct or have a negative influence on research conducted by other countries—research in the interests of mankind—or which would create any kind of impediment or obstacle to exploration or utilization of outer space for peaceful purposes by other countries," third, that a "principle should be proclaimed according to which the penetration, exploration and utilization of outer space should be exercised by States whose Governments are entirely responsible for any activities in outer space," and, fourth, "juridical provisions to ensure the sovereign rights of States with respect to the various objects they are launching."³⁰³ As to the last point he asserted that the launching state should be entitled to receive back objects coming to rest in other states, provided suitable information had been submitted to the United Nations by the launching state.

He took some pains to point out why he had asserted the claim that space devices should be the product of public rather than private efforts. He considered that communications satellites might be employed "in order to harm people, to foster the cold war, and to aggravate international tensions * * *. It is necessary to work out juridical provisions which would prohibit any activities in outer space, such as the use of telecommunications or television satellites, which might be used for war propaganda or propaganda of racial animosity and hatred, and among peoples and nations."³⁰⁴

The tone of the Kennedy-Khrushchev letters caught the attention of the members of the committee and thereby improved considerably the hopes that written agreements and international cooperation for the peaceful uses of outer space might be achieved. The committee's activities were adjourned on March 29th so that two subcommittees, legal and scientific and technical, might meet in Geneva on May 28, 1962.

It was at this time that the United States proposed to the 18-nation Committee on Disarmament a Treaty on General and Com-

³⁰³ *Ibid.*

³⁰⁴ *Ibid.*, 27. See pp. 211-390 *infra* for a comparison of these principles with those advanced by the United States, the United Kingdom, and the United Arab Republic.

plete Disarmament in a Peaceful World.³⁰⁵ Thus, on April 18, 1962, a draft treaty affecting the uses of outer space was made public which provided that states should agree "not to place in orbit weapons capable of producing mass destruction." The draft also provided for agreement "to support increased international cooperation in peaceful uses of outer space in the United Nations or through other appropriate arrangements."³⁰⁶ It also provided for advance notification of launchings and for the prelaunch inspection of space vehicles and missiles by an International Disarmament Organization and for the detection of unreported launchings. This proposal was supplemented on August 27, 1962, by a draft treaty prepared by the United States and the United Kingdom for signature by these two and by the Soviet Union providing an obligation to discontinue nuclear weapons tests in all environments. Article I b. provided for the parties to undertake "to refrain from causing, encouraging, or in any way participating in, the carrying out of nuclear weapon tests explosions anywhere."³⁰⁷

The admittedly close interrelationship between scientific, technological, political, legal, and defense aspects of outer space very importantly conditioned the ongoing efforts in the United Nations to provide a substantial legal regime for that environment. These considerations manifestly affected the initiation of studied and cautious negotiations by the legal and by the scientific and technological subcommittees of the Committee on the Peaceful Uses of Outer Space in Geneva, May 28 to June 20, 1962. In their careful deliberations the member states sought to implement the legal principles contained in Resolution 1721 (XVI). In the following months negotiations were conducted in the First Committee of the U.N., in the General Assembly, in such public international organizations as the International Telecommunications Union (ITU), the World Meteorological Organization (WMO), UNESCO, the World Health Organization (WHO), and in such private scientific agencies as COSPAR. In addition, the Economic and Social Council (ECOSOC) of the United Nations demonstrated an interest in the subject and cooperated with the other organs of the United Nations.

During that period several issues of central importance developed. First, a general consensus developed that there were some practical matters affecting the peaceful uses of outer space in which states

³⁰⁵ "United States Presents Outline of a Treaty on General and Complete Disarmament," 46 *Department of State Bulletin* 747 (1962).

³⁰⁶ *Ibid.*, 751.

³⁰⁷ "Draft Treaty Banning Nuclear Weapon Tests in All Environments," 47 *Department of State Bulletin* 411 (1962).

were in general agreement. Second, the Soviet Union, with general support by members of its bloc, announced its support of limitations upon the free and peaceful uses of outer space. Third, the United States tentatively advanced certain views for the control of some forms of space conduct, and at the same time rejected certain Soviet claims for a restriction upon the peaceful uses of outer space. United States and Soviet differences were made known to the entire community, and this led both to the firming of positions and effort to arrive at a workable middle ground. During the same time it became clear that the Legal Subcommittee would be seriously affected in its deliberations by concern for political and defense considerations, while at the same time the members of the Scientific and Technological Subcommittee would arrive at many practical solutions to practical problems, and further, would begin to implement such decisions.

The legal subcommittee during May and June, 1962, sought to achieve a consensus on a number of the points raised in the Kennedy-Khrushchev correspondence of the preceding March. The debates proceeded on the basis that the principles of part "A" of Resolution 1721 (XVI) were suitable foundations upon which there might be developed legal rules relevant to outer space activity. The United States submitted two proposals. The first was entitled "Assistance to and Return of Space Vehicles and Personnel."³⁰⁸ The second was entitled "Liability for Space Vehicle Accidents."³⁰⁹ The two Soviet proposals were entitled "International Agreement on the Rescue of Astronauts and Spaceships Making Emergency Landings,"³¹⁰ and "Declaration of the Basic Principles Governing the Activities of States Pertaining to the Exploration and Use of Outer Space."³¹¹ The government of India also submitted a proposal which linked the subject of return of space vehicles and personnel with the subject of liability.³¹² The government of Canada filed an assessment pointing to the fact that members of the Subcommittee had endorsed the need for an agreement fixing liability for space vehicle accidents.³¹³ No agreements were reached on any of the proposals submitted to the Subcommittee.

When the whole Committee met from September 10 to 27, 1962, a fifth proposal entitled "Draft Code for International Co-operation

³⁰⁸ U.N. Docs. A/AC.105/6, 6; A/AC.105/C.2/L.3.

³⁰⁹ U.N. Docs. A/AC.105/6, 6; A/AC.105/C.2/L.4.

³¹⁰ U.N. Docs. A/AC.105/6, 4-5; A/AC.105/C.2/L.2.

³¹¹ U.N. Docs. A/AC.105/6, 3-4; A/AC.105/C.2/L.1.

³¹² U.N. Docs. A/AC.105/6, 7; A/AC.105/C.2/L.5. and Corr. 1.

³¹³ U.N. Docs. A/AC.105/6, 8; A/AC.105/C.2/SR.13.

in the Peaceful Uses of Outer Space" was submitted by the United Arab Republic.³¹⁴ The whole Committee, also unable to come to specific agreements, submitted the proposals and records of its second session³¹⁵ to the General Assembly on September 27, 1962.

During December, 1962, the First Committee received from the United Kingdom a "Draft Declaration of Basic Principles Governing the Activities of States Pertaining to the Exploration and Use of Outer Space."³¹⁶ On December 8, 1962, the United States also circulated to the First Committee a "Draft Declaration of Principles Relating to the Exploration and Use of Outer Space."³¹⁷

The United States declaration of principles, after emphasizing the fact that it was in the common interest of all mankind to further the peaceful exploration and use of outer space, proposed seven principles to states for their guidance in the exploration and use of outer space. The first three of the principles were taken directly from General Assembly Resolution 1721 (XVI). Thus, they called first for free exploration and use by all states, on the basis of equal rights, of outer space and celestial bodies in conformity with international law. Secondly, the United States asserted as a principle the fact that states are bound by the relevant rules of international law and the relevant provisions of international treaties and agreements, including the Charter of the United Nations, in the exploration and use of outer space and celestial bodies. Third, it was the position of the United States that outer space and celestial bodies are not subject to national appropriation. The remaining four principles, which had been favorably received in the committees of the United Nations dealt with assistance to space vehicle personnel, return of crew and vehicle to launching state, international responsibility and damage, and jurisdiction. Thus, the fourth United States principle provided that states "shall render all possible assistance to the personnel of space vehicles who may be the subject of accident or experience conditions of distress, or who may land by reason of accident, distress, or mistake. Space vehicle personnel who make such a landing shall be safely and promptly returned to the launching authority."³¹⁸

³¹⁴ U.N. Doc. A/5181. Annex 14, *infra*, p. 463.

³¹⁵ U.N. Doc. A/AC.105/PV. 10-16.

³¹⁶ U.N. Doc. A/C.1/879. Annex 18, *infra*, p. 469.

³¹⁷ U.N. Doc. A/C.1/881. Annex 10, *infra*, p. 459. The meaning of the draft was explained in detail by Senator Gore to the First Committee on December 10, 1962. U.N. Doc A/C.1/PV.1296, 2-12.

³¹⁸ *Ibid.*, 2.

The fifth United States principle provided that "States shall return to the launching authority any space vehicle or part that has landed by reason of accident, distress, or mistake. Upon request, the launching authority shall furnish identifying data prior to return."³¹⁹ The sixth principle called for the establishment of liability on the part of a state or international organization from whose territory or with whose assistance or permission a space vehicle is launched when harm was produced by the launch. Such a state or international organization "bears international responsibility for the launching, and is internationally liable for personal injury, loss of life, or property damage caused by such vehicle on the earth or in air space."³²⁰ Pursuant to the final principle, jurisdiction over a space vehicle "while it is in outer space shall be retained by the State or international organization which had jurisdiction at the time of launching. Ownership and property rights in a space vehicle and its components remain unaffected in outer space or upon return to the earth."³²¹

The First Committee of the General Assembly considered the efforts of the Committee on the Peaceful Uses of Outer Space during December, 1962. The First Committee concerned itself primarily with a draft resolution dealing with international cooperation in the peaceful uses of outer space which had been submitted by the United States on November 29, 1962.³²² By December 11, 1962, the United States draft had been co-sponsored by twenty-three other states, including the Soviet Union, and was unanimously adopted by the committee.³²³ This document was then referred to the General Assembly and on December 19, 1962, was unanimously adopted as Resolution 1802 (XVII), "International co-operation in the peaceful uses of outer space."³²⁴

Resolution 1802 broadly seeks to facilitate the implementation of legal principles promulgated in Resolution 1721 (XVI). The 1962 resolution, after recalling Resolution 1721, set forth both the grounds for and the areas in which further development of international space law might develop.

³¹⁹ *Ibid.*

³²⁰ *Ibid.*, 3.

³²¹ *Ibid.*

³²² U.N. Doc. A/C.1/L.320. This should not be confused with the later United States Draft Declaration of Principles of December 8, 1962. Annex 10, *infra*, pp. 459-460.

³²³ U.N. Doc. A/5341, 2.

³²⁴ U.N. Doc. A/RES/1802 (XVII). Annex 3, *infra*, pp. 446-450.

The 1962 resolution recited the unanimous belief of the members of the United Nations that the "activities of States in the exploration and use of outer space should be carried out in conformity with international law including the Charter of the United Nations, in the interest of friendly relations among nations." In its operative portions it expressed regret that recommendations on legal questions had not been received. It thereupon called upon member states to cooperate in the "further development of law for outer space." It then requested the Committee on the Peaceful Uses of Outer Space to continue on a basis of urgency to elaborate more specifically certain areas of law relating to outer space. These areas were four in number, and are set forth in Resolution 1802 in the following order, although the order of statement was not to be considered as a delineation of priority by the United States delegate: "The further elaboration of basic principles governing the activities of States in the exploration and use of outer space, on liability for space vehicle accidents and on assistance to, and return of, astronauts and space vehicles, as well as other legal problems."³²⁵ The General Assembly instructed the Committee on the Peaceful Uses of Outer Space to take into account the various drafts referred to above as well as all other proposals and documents presented to the General Assembly during its debates on this subject, including the records of those debates.

With this directive confronting it the Committee, through its subcommittee on legal matters, reconvened early in 1963 to consider suitable approaches to legal problems of outer space. The conditions were not particularly favorable for productive discussions. Illustrative of this fact were sterile discussions lasting through March as to where future meetings were to be held.

Soviet limitations to the legal principles contained in Resolution 1721 (XVI) were first presented to the legal subcommittee at its Geneva meeting, 28 May-20 June 1962, in the form of a declaration of basic principles governing the activities of states pertaining to the exploration and use of outer space.³²⁶ In an amended and modified form the Soviet proposals were placed before the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space on April 16, 1963.³²⁷ The Soviet proposals were intended to serve as an alternate to those submitted to the subcommittee by

³²⁵ *Ibid.*

³²⁶ U.N. Doc. A/AC.105/C.2/L.1; U.N. Doc. A/AC.105/6, 3-4.

³²⁷ U.N. Doc. A/AC.105/C.2/L.6. Annex 16, *infra*, pp. 466-468. An explanation of their meaning was made by Mr. Fedorenko on April 17, 1963. U.N. Doc. A/AC.105/C.2/SR.17.

the United States on December 8, 1962.³²⁸ The Soviet proposals of April 16, 1963, embodied some of the proposals submitted by other states, particularly some of those contained in the draft declaration of basic principles prepared by the United Kingdom and the draft code prepared by the United Arab Republic. There was some similarity of language in the last Soviet proposal and the United States "Draft Declaration of Principles Relating to the Exploration and Use of Outer Space" of December 8, 1962.

Common subjects were mentioned, but the Soviet proposal was longer and varied considerably from the principles put forward by the United States. They were fundamentally different in approach. The United States had also previously submitted detailed draft proposals on assistance to and return of space vehicles and personnel and liability for space vehicle accidents. More importantly, the United States sought the approval of its principles in the form of a resolution of the United Nations, whereas the Soviet Union urged its proposals in the form of a declaration of the United Nations, to be followed by signatures as in the case of a treaty or international convention. Further, the Soviet set of principles proposed limitations upon the peaceful uses of outer space, which had not been contemplated in the proposals of the United States. The Soviet principles by reason of their detail introduced subjects into the space debate which were not at all material to its broadest and most beneficial uses.

Both proposals in their respective introductory language recognized "the common interest of all mankind" in furthering the "peaceful exploration and use of outer space" according to the United States proposal,³²⁹ and "in the progress of the exploration and use of outer space for peaceful purposes" pursuant to the Soviet draft.³³⁰ The British Draft Declaration of Basic Principles, which had been filed with the First Committee on December 4, 1962, did not contain a preamble.³³¹

The United States and the Soviet drafts were identical in believing "that the exploration and use of outer space should be for the

³²⁸ U.N. Doc. A/C.1/881, Annex 10, *infra*, pp. 459-460.

³²⁹ U.N. Doc. A/C.1/881, 2-3. This citation covers all of the immediately following references to the United States Draft Declaration of Principles of December 8, 1962. Annex 10, *infra*, pp. 459-460.

³³⁰ U.N. Doc. A/AC.105/C.2/L.6, 1-3. This citation covers all of the immediately following references to the Soviet Draft Declaration of Basic Principles of April 16, 1963. Annex 16, *infra*, pp. 466-468.

³³¹ U.N. Doc. A/C.1/879. This citation covers all of the immediately following references to this document. Annex 18, *infra*, pp. 469-470.

betterment of mankind and to the benefit of States irrespective of the stage of their economic or scientific development." Identical language provided "that such co-operation will contribute to the development of mutual understanding and to the strengthening of friendly relations among nations and peoples."

The preamble of the United Arab Republic draft code of September 1962, which had been deposited because of an acknowledged need to promote "international cooperation in the peaceful exploration and uses of outer space," considered the United Nations to be the focal point for such activity.³³² The UAR preamble asserted that it was "imperative in the interests of mankind that activities in outer space should be exclusively devoted to the peaceful uses of outer space," and the first operative paragraph asserted that "the activities of Member States in outer space should be confined solely to the peaceful uses."

All proposals made reference to Resolution 1721 (XVI), whereas the Soviet draft, coming after the adoption of Resolution 1802 (XVII), noted the latter also and recited that both resolutions had been adopted unanimously. The United States preamble made reference to "the great importance of international cooperation in this field of human activity," whereas the Soviet noted the desirability of promoting "broad international cooperation in the exploration and use of outer space for peaceful purposes." This theme was enlarged on in paragraph 2 of the UAR proposal, which indicated "That in their policies toward outer space Member States should promote international and peaceful cooperation." The UAR draft devoted much attention to this position. Thus, paragraphs 6, 7, 8, and 9 suggested as guidance for committee work:

6. That one of the main objectives in international peaceful cooperation in outer space is to develop special programmes in which the developing countries can participate with a view to promoting world-wide interest in outer space;

7. That Member States agree to make full use of the facilities and experience of all international organizations, specialized agencies and non-governmental organizations, which have activities in outer space;

8. That Member States will exert every possible effort to provide the United Nations Secretary-General, on a voluntary basis, with all information necessary for the promoting of international cooperation in the peaceful uses of outer space;

³³² U.N. Doc. A/AC.105/L.6; U.N. Doc. A/5181. This citation covers all of the immediately following references to this document. Annex 14, *infra*, pp. 463-464.

9. That Member States undertake to give all possible assistance to the United Nations and its affiliated organizations, to undertake joint programmes of training and research to promote science and technology in outer space.

Additionally, the Soviet draft preamble acknowledged "the great prospects opening up before mankind as a result of penetration into outer space," and borrowed from the preamble of the UAR draft which had noted the interrelationship of the technical and legal aspects of the activities of states in outer space. The UAR preamble recited the need for a framework to guide the future space activities of the Committee on the Peaceful Uses of Outer Space, and urged that its work might help to "save succeeding generations from the scourge of war."

The difference in the United States and Soviet approaches was set forth in the following opposing drafts. The United States preamble commended "to States for their guidance in the exploration and use of outer space the following declaration of principles * * *", whereas the Soviet preamble called for a signed declaration whereby states "solemnly declare that in the exploration and use of outer space they will be guided by the following principles * * *."

The substantive principles illustrate similarities and dissimilarities. Paragraph 1 of the United States draft provided that "outer space and celestial bodies are free for exploration and use by all States, on the basis of equal rights, in conformity with international law." The first sentence of paragraph 1 of the British draft is identical, except no reference was made to "on the basis of equal rights."

Paragraph 2 of the Soviet draft provided (after having indicated in paragraph 1 that "The exploration and use of outer space shall be carried out for the benefit and in the interests of mankind.") that "Outer space and celestial bodies are free for exploration and use by all States * * *". The Soviets then added in paragraph 2 that "sovereignty over outer space or celestial bodies cannot be acquired by use or occupation or in any other way." The addition took into account the British basic principles, which had sought to distinguish clearly between freedom to do certain things in space or freedom from controls, from types of activity where control might be expected. In the present context the British draft provided in paragraph 2 that "Outer space and celestial bodies are not capable of appropriation or exclusive use by any State" and then added "Accordingly, no State may claim sovereignty over outer space or over any celestial body, nor can such sovereignty be acquired by means of use or occupation or in any other way." This view

conforms to the principle contained in paragraph 3 of the United States draft of principles which provided that "Outer space and celestial bodies are not subject to national appropriation."

The United States, the Soviet, and the United Kingdom drafts recognized the application of the UN Charter and international law to specified activities in outer space. Thus, paragraph 2 of the United States draft recited that "In the exploration and use of outer space and celestial bodies, States are bound by the relevant rules of international law and the relevant provisions of international treaties and agreements including the Charter of the United Nations." The British draft confirmed this view in paragraph 3, by providing that "In the exploration and use of outer space and celestial bodies States are bound by international law and by the provisions of the United Nations Charter and other international agreements which may be applicable."

The Soviet proposal, paragraph 4, stated that "The activities of States pertaining to the conquest of outer space shall be carried out in accordance with the principles of the United Nations Charter and with other generally recognized principles of international law in the interests of developing friendly relations among nations and of maintaining international peace and security." In this proposal the Soviets, by the use of the word "conquest," substituted a new expression for the previously accepted language of "exploration and use" used in the various UN debates. Paragraph 4 of the Soviet proposal also endeavored to emphasize the role of "security" and, at least on the surface, appeared, through reference to general principles of international law, to make concessions to the concept of general customary international law—although it is probable that stronger evidence than is contained in the foregoing paragraph will be required to support the view that the Soviets have given up their traditional distrust of the role of customary law.

The Soviets, as is well known, have stressed the view that international law must take into account, not only national security, but also the sovereign equality of states. Having worked the notion of sovereignty into paragraph 2 of their proposal, they thereupon made reference to equality in paragraph 3: "All States have equal rights to explore and use outer space." The British proposal, paragraph 4, extended the Soviet view, in that it opened the possibility that individuals as well as states could possess rights to explore and use space. The British paragraph provided "All States, shall, for themselves and for their nationals, have equal rights in the exploration and use of outer space. These rights shall be exercised in accordance

with international law and with the principles affirmed in this Declaration."

All of the drafts, except the British, made reference to such practical matters as liability, assistance, and return. Thus, the UAR draft, paragraphs 3 through 5, made provision that:

Member States bear special responsibility emanating from their obligations to secure the safety of space for astronauts in outer space.

Member States agree to provide every possible assistance to personnel of space vehicles who may be the subject of accident or experience conditions of distress or who may land by reason of accident, distress or mistake.³³³

Member States undertake to return to the State or international organization responsible for launching space vehicles these space vehicles and its personnel.

Paragraph 4 of the United States draft deals with assistance to be rendered to personnel who return to earth in space vehicles. Paragraph 6 of the Soviet draft, while making reference to "assistance" does not recite the rights of returning personnel,³³⁴ and, in fact, puts forward a very broad limitation upon national exploration and use of outer space. The Soviet proposal provided:

Co-operation and mutual assistance in the conquest of outer space shall be a duty incumbent upon all States; any measures that might in any way hinder the exploration or use of outer space for peaceful purposes by other countries may be implemented only after prior discussion of and agreement upon measures between the countries concerned.³³⁵

³³³ For an analysis of legal aspects of aerial distress, see Lissitzyn, "The Treatment of Aerial Intruders in Recent Practice and International Law," 47 *A.J.I.L.* 564 (1953).

³³⁴ The United States had previously submitted a draft proposal on this subject, *U.N. Doc. A/AC.105/L.4, infra*, pp. 211-212, as had the Soviet government, *U.N. Doc. A/AC.105/L.3, infra*, pp. 211, 279n, 287.

³³⁵ *U.N. Doc. A/AC.105/C.2/L.6.* United States policy on this subject had been stated by Senator Gore to the First Committee on December 3, 1962: "The United States believes that nations which conduct activities in outer space should take all reasonable steps to avoid experiments or other activities which seriously threaten to deny or to limit the use of outer space to other nations. This is consistent with well established principles of international law. We encourage prior international discussion concerning experimental activities in space which may have undesirable effects, and my Government is prepared in the future, as in the past, to consult with scientists of other countries as well as United States scientists wherever practicable and consistent with our national security." *U.N. Doc. A/C.1/PV.1289*, 17.

The enormity of this proposal may be noted from both the legal and the political point of view. After 1957, usage had crystallized around the legal concept that outer space might be used for peaceful purposes without hindrance. This view was based on the general legal proposition that such conduct was engaged in as a *right* on the proposition that all peaceful conduct was permitted until specifically prohibited. Prior to this Soviet proposal this principle had not been challenged. The Soviet proposal, however, would reverse the traditional presumption and would suggest that peaceful, i.e., nonaggressive and beneficial, uses might not be engaged in until after the consent of "the countries concerned," itself a vague concept. From the political point of view the Soviet proposal would enable a state to veto the conduct of another state on undefined, and probably undefinable, grounds.

The United States made provision in paragraph 5 for the return to a launching authority of space vehicles or parts which had landed by reason of accident, distress, or mistake. The term "launching authority" was selected to serve as generic enough to take into account such legal entities as states and international organizations. The duty to return, however, was that of states.

The Soviet Union proposed a similar legal rule. Prefixing their proposal, paragraph 10, with the view that states "shall regard cosmonauts as envoys of mankind in outer space and shall render all possible assistance to spaceships and their crews which may make an emergency landing on the territory of a foreign State or on the high seas * * *," the Soviets went on to provide that "spaceships, satellites or capsules found beyond the limits of the launching State shall be returned to that State."

The United States made provision in paragraph 6 for liability on the part of states or international organizations from whose territory or with whose assistance or permission a space vehicle was launched. The Soviets proposed in paragraph 11 that only a state should undertake space activities and noted that a "State undertaking activities in outer space bears international responsibility for damage done in a foreign State or to its physical or juridical persons as a result of such activities." The proposal of the United States encompasses liability for "personal injury, loss of life, or property damage caused by such vehicles on the earth or in air space," but made no reference to liability in outer space.

There is some semblance of agreement between the United States and Soviet proposals in the areas of jurisdiction and ownership of vehicles. The United States draft, paragraph 7, called for jurisdic-

tion over a space vehicle while it is in outer space on the part of the state or international organization which possessed jurisdiction at the time of launch. The Soviet proposal, paragraph 8, rejecting the view that a launch might be accomplished by an international organization, provided that national states shall retain their "sovereign rights over objects they launch into outer space." Paragraph 7 of the United States draft and paragraph 8 of the Soviet draft are almost identical in their provision for ownership. According to the United States, "Ownership and property rights in a space vehicle and its components remain unaffected in outer space or upon return to the earth." The Soviets accepted this view by making provision that "Rights of ownership in respect of objects launched into outer space and their components remain unaffected while they are in outer space and upon their return to earth."

A number of unresolved problems may arise on the basis of these foregoing provisions, but the difficulties would not appear to be insuperable, assuming tolerance and good will on the part of the differing states or international organizations. However, the Soviet proposal contained three paragraphs, (5, 7, and 9), which injected critically different social, economic, and political considerations into efforts to both facilitate and control the peaceful uses of outer space. These paragraphs follow:

5. The use of outer space for propagating war, national or racial hatred or enmity between nations is inadmissible.

7. All activities of any kind pertaining to the exploration and use of outer space shall be carried out solely by States. If States undertake activities in outer space collectively, either through international organizations or otherwise, each State participating in such activities has a responsibility to comply with the principles set forth in this Declaration.

9. The use of artificial satellites for the collection of intelligence information in the territory of a foreign State is incompatible with the objectives of mankind in its conquest of outer space.

In referring generally to the ideas contained in paragraph 5 and 9, the Italian delegate pointed out to the legal subcommittee on April 24, 1963, that they constituted points of disagreement and that such proposals "did not really hinge on problems directly related to the use and exploration of outer space."³³⁶ The same comment applies with equal validity to paragraph 7 of the Soviet proposals.

³³⁶ U.N. Doc. A/AC.105/C.2/SR.20, 3.

The Soviet position has been built consistently around five concepts which are central to their policies and their understanding and use of international law. Mr. Morozov, as previously noted, in speaking to the Committee on the Peaceful Uses of Outer Space, on March 20, 1962, sought to construe General Assembly Resolution 1721 (XVI) in the light of these Soviet views. He urged that "the principles which have already been approved by the General Assembly signify in our view, that the activities of the States in outer space research should be conducted in keeping with the recognized principles of peaceful coexistence, sovereignty, equality, nonaggression and noninterference in domestic affairs."³³⁷ And he added, "These important principles and provisions should be studied and should become a basis for the work of the juridical subcommittee."³³⁸ It was at this time that he urged the acceptance of the propositions which are not contained in paragraphs 5, 7, and 9 of the Soviet draft of April 16, 1963.

Mr. Kiselev, representing the Byelorussian SSR, speaking before the First Committee on December 10, 1962, again called attention to the belief that "international co-operation in the conquest of outer space * * *" would have to be solved "by respecting such generally recognized principles as the principle of peaceful coexistence, respect for the sovereignty of States, nonaggression, noninterference in the internal affairs of countries, and equal rights."³³⁹

The Soviet Union by joining in the sponsorship of Resolution 1721 (XVI), and assuring its unanimous adoption not only through its own vote but also those of the Soviet bloc, gave its approval to a set of principles applicable particularly to peaceful, i.e., non-aggressive and beneficial, uses of outer space. Since December 1961, the proper role of states engaged in negotiations in the United Nations forum on the legal status of outer space has been to reduce the previously acknowledged principles into a set of working rules. In a substantive sense, this has become the problem of controlling or qualifying the promulgated freedom of use and exploration within a framework of general principles.

Such control, by its very nature, must encourage certain types of space activity, and must also discourage or inhibit other kinds of space activity. In arriving at a decision as to permitted and non-

³³⁷ U.N. Doc. A/AC.105/PV.3, 23-25.

³³⁸ *Ibid.*

³³⁹ U.N. Doc. A/C.1/PV.1297, 13. These views have long been current in the Communist world. Compare the terms of the treaty of April 29, 1954, between Red China and the Republic of India. See also, Lissitzyn, "The Soviet View of International Law," 14 *Naval War College Review* 1 (1961).

permitted conduct, nation-states will, of necessity, be required to take into account such beneficial factors as freedom of exploration and use, but must also take into account the needs of international peace and security and national defense. The latter, of course, must be measured on the basis of the fact that the physical location of an orbiting space vehicle has no direct bearing on the amount of good or the amount of harm that it may produce. Thus, a space vehicle need not be superjacent to a given state in order to observe what is going on below, just as it would not be necessary for a space platform to be superjacent to a state prior to its use in connection with nonpeaceful, i.e., aggressive and nonbeneficial purposes. In view of these facts, Johnson has stated "What is required is some form of international control directed toward specific space activities, regardless of the location of their occurrence."³⁴⁰ This viewpoint, which reflects United States policy, is based on the need to establish practical answers for real problems. The draft proposals urged by the United States provide evidence of this approach. However, the United States, along with other states, has avoided the formulation of a detailed code at this time. Moreover, the United States, along with other states, as previously pointed out, has been willing to propose and to discuss comparable proposals made by other states looking to an acceptance of principles extended beyond the terms of Resolution 1721 (XVI).

The position of the United States has been to accept the concept of control, within the reasonable context of national interest, and subject to the concepts of freedom contained in Resolution 1721 (XVI). It has sought to achieve an orderly, and hopefully, peaceful, i.e., nonaggressive and beneficial, legal structure for outer space. As Senator Gore pointed out to the First Committee on December 3, 1962, the "United States policy and United States programmes for outer space are peaceful in intent, co-operative in practice and beneficial in operation."³⁴¹ This has resulted in a willingness to achieve controls respecting the use of radio frequencies, the establishment of rules of liability, the achievement of agreement on the return of personnel and equipment, and, additionally, such principles as would contribute to the advancement of the peaceful, i.e., nonaggressive and beneficial, uses of outer space. Such control may be secured through the UN forum insofar as its program takes the Charter and international law for the standard for space activities.

³⁴⁰ Johnson, "The Future of Manned Space Flight, and the 'Freedom' of Outer Space," *NASA News Release*, August 4, 1962, 5.

³⁴¹ U.N. Doc. A/C.1/PV.1289, 32.

As a result of this, "mankind would * * * be free to use space on the same basis as it uses the high seas—free of any restraints except those on exclusive use and illegal activity such as aggression."³⁴²

At the time of this writing, the April-May 1963, discussions of the legal subcommittee of the Committee on the Peaceful Uses of Outer Space have been concluded. As a result of the political-legal claims advanced in this forum, and the generally ardent support for the principles previously promulgated through the United Nations, certain conclusions may be stated.

1. The broad principles contained in Resolutions 1348 (XIII), 1721 (XVI), and 1802 (XVII) of the General Assembly continue to have the general approval of UN members, particularly the strong affirmative support of the Western states.

2. It was universally recognized that it was highly desirable to extend such principles and to develop suitable rules respecting outer space activities.

3. There was very broad agreement as to the specific rules which were needed.

4. There was substantial agreement as to detail regarding the substance of additional principles, although there was substantial disagreement respecting proposals advanced by the Soviet bloc concerning the instrumentalities by which space activity could be conducted, as well as substantial disagreement respecting the Soviet proposal dealing with observational activities.

5. While there was a profound recognition of the fact that a law of outer space was emerging and although there was a somewhat diminishing difference as to whether it should be put forward in the form of resolutions, declarations, or treaties, there was still a strong difference as to whether the substance should find expression as principles or as rules, and whether priority should be assigned to the principles or the rules.

6. It was well understood that political considerations had been introduced into the legal discussions and it was clear that states would have to measure their expectations in terms of their political goals and willingness to engage in political "give and take."

7. Despite differences, the content of space law continued to harden, and, additionally, scientific and technological working agreements were reached between the two major space powers.

The most important result of UN deliberations has been the revitalization of the principle first promulgated on December 13,

³⁴² Gardner, "Cooperation in Outer Space," 41 *Foreign Affairs* 345 (1963).

1958, in the form of General Assembly Resolution 1348 (XIII). That resolution stated in the first paragraph of its preamble that the General Assembly recognized "the common interest of mankind in outer space and that it is the common aim that it should be used for peaceful purposes only * * *" ³⁴³ Not until the United Arab Republic submitted in 1962, its Draft Code for International Cooperation in the Peaceful Uses of Outer Space was serious attention given, by countries other than the United States, to the principle that such uses should be solely or exclusively for peaceful purposes. Paragraph 1 of this draft called for states to be guided by the principle that "the activities of Member States in outer space should be confined solely to the peaceful uses. * * *" Lest there be any mistake, the preamble also referred to the fact that "activities in outer space should be exclusively devoted to the peaceful uses of outer space." ³⁴⁴ Speaking on May 3, 1963, the Indian delegate told the legal subcommittee that several delegations had expressed support for that principle and that "It was regrettable that no agreement had been reached on the one principle which his delegation had hoped would be universally accepted—the principle that outer space should be used solely for peaceful purposes." ³⁴⁵ A few minutes later, Mr. Meeker, speaking on behalf of the United States, which had voted in favor of Resolution 1348 (XIII), stated that the United States had always supported the principle that outer space should be used solely or exclusively for peaceful purposes. His exact words were that "his delegation wished to place on record the fact that the basic ideas in the draft code submitted by the United Arab Republic (A/AC.105/L.6) represented propositions to which the United States Government had been committed from the beginning of the space age." ³⁴⁶ Mr. Timerbaev of the Soviet Union, speaking next, stated,

³⁴³ II *Documents on Disarmament* 1305 (1945–1959); Annex 7, *infra*, pp. 456–458.

³⁴⁴ U.N. Doc. A/AC.105/L.6; U.N. Doc. A/5181, Annex 3, 7.

³⁴⁵ U.N. Doc. A/AC.105/C.2/SR.28, 6.

³⁴⁶ *Ibid.*, p. 9. It should be recalled that President Eisenhower wrote to Premier Bulganin on January 12, 1958, "I propose that we agree that outer space should be used only for peaceful purposes," 38 *Department of State Bulletin* 126 (1958); that on January 16, 1958, Secretary of State Dulles, stated that the President had "advanced the most significant proposal that could be made at this time to assure human survival, namely, that outer space should be used only for peaceful purposes." "The Role of Negotiation," 38 *Department of State Bulletin* 162 (1958); and that on September 18, 1948, he told the General Assembly that "We must make every effort to dedicate outer space exclusively to constructive pursuits." "Problems of Peace and Progress," 39 *Department of State Bulletin* 528 (1958). These statements

"The Soviet Union had always maintained that outer space should be used solely for peaceful purposes."³⁴⁷ In view of the fact that the Soviet Union had led the Soviet bloc in opposition to, and had voted against, Resolution 1348 (XIII), this statement was important. Even so, by announcing that it would be guided by this principle, it failed to assume a position as firm as that of the United States—that of being committed to the principle. Following the Soviet change of position, the representative of the UAR observed that the acceptance of this principle was "necessary for progress towards the adoption of other principles."³⁴⁸

Several delegates, in undertaking to assess the achievements of the subcommittee's activities, pointed to the need for states to consider the political aspects involved in endeavoring to satisfy the claims of states for the legal order of space activities. Thus, Mr. Meeker noted that the committee members "should be prepared to engage in the give and take of international discourse and to make adjustments in their positions in order to achieve a consensus."³⁴⁹ The Austrian delegate suggested that "What was lacking was not agreement but the will to record it."³⁵⁰

A number of delegates, even before the Soviet delegate had acknowledged that outer space ought to be used solely for peaceful purposes, had summarized the extent to which states were in agreement respecting both the substance of the law and the need to formulate specific agreements. On April 25, 1963, for example, the Australian member of the subcommittee had noted that there was

should be compared with the position announced by Mr. Loftus Becker, legal advisor to the Department of State, who on June 9, 1958, made the following statement to the Special Senate Committee on Space and Astronautics: "The most immediate problem in the field of space foreign policy is how to insure that outer space is used for peaceful purposes only." He continued by stating that the United States was engaged in taking steps "to assure that missiles and other outer-space vehicles, already in the development stage, will be utilized solely for peaceful purposes." Becker, "Major Aspects of the Problem of Outer Space," *Department of State Bulletin* 962-963 (1958); *Space Law, A Symposium*, *supra* note 10, Chapter I, at 367-368. From the foregoing, it is abundantly clear that the United States has always supported the position that outer space should be used for peaceful purposes only. In doing so it has shaped the substance of the law of outer space.

³⁴⁷ *Ibid.*, p. 13.

³⁴⁸ *Ibid.*, p. 14.

³⁴⁹ *Ibid.*, p. 9.

³⁵⁰ *Ibid.*, pp. 3-4.

a substantial area of agreement on each of the subjects mentioned in Resolution 1802 (XVII). He then stated:

There was complete agreement in broad principle that a State launching a space vehicle should be internationally liable, without fault, for injury, loss or damage caused by the vehicle on the earth or in the air space, and that States should be under a duty to render all possible assistance to the personnel of a space vehicle landing by accident, distress or mistake and to return to the launching State both personnel and vehicle. It was also apparent that an important measure of agreement existed concerning the further elaboration of basic legal principles governing the activities of States in the exploration and use of outer space.³⁵¹

The Austrian delegate opined that there had been a unanimous consensus that a draft declaration of basic principles should contain four principles, namely:

Outer space and celestial bodies were free for exploration and use by all States; sovereignty could not be acquired over outer space or celestial bodies; States were liable for damage caused by space vehicles; and assistance should be accorded to space vehicles in distress.³⁵²

He also noted that there was considerable agreement on the subject of prior consultations between states concerning experiments affecting outer space.

The representative of the United States concurred that there was general agreement respecting rules and principles, both existing and proposed. As to the subject matter of formal agreement respecting rules, he stated that a treaty on assistance and return was recognized as appropriate. Further, it was his view that there had been agreement on the desirability, and to a large measure on the contents, of a declaration of basic principles to guide states in their exploration and use of outer space. He added:

Specifically, there was a consensus on the freedom of outer space for exploration and use by all States, on a basis of equality and in accordance with international law; on the immunity of celestial bodies from national appropriation; on the applicability of international law, including the United Nations Charter, to relations among States in outer space; on retention by the

³⁵¹ U.N. Doc. A/AC.105/C.2/SR.23, 3.

³⁵² U.N. Doc. A/AC.105/C.2/SR.28, 3.

launching authority of jurisdiction over and ownership of space vehicles; on assistance to astronauts in distress and return of space vehicles and their personnel, and on liability for injury or damage caused by space vehicle accidents.³⁵³

He also pointed to the fact that the United States, as well as other states, had been willing—following the general lines of the Soviet draft proposal contained in their paragraph 6—to engage in appropriate international “consultation on problems of interference and contamination in outer space and of providing for discussion of particular proposed projects.”³⁵⁴ He rejected the proposal contained in paragraph 7 of the Soviet proposal, which would have required that space activities be restricted to state vehicles, but acknowledged that the debate had “disclosed a widely shared recognition of the fact that Governments bore responsibility and were accountable for national space activities.”³⁵⁵

The Soviet delegate called attention to the fact that the United States had declined to discuss paragraphs 5 and 9 of the Soviet draft. He stated that “The United States delegation had not even mentioned many important issues which had been raised in the Subcommittee, such as the question of the prohibition of the use of artificial satellites for the collection of intelligence information and the inadmissibility of the use of outer space for propagating war, national or racial hatred or enmity between nations.”³⁵⁶ Many of the delegates had pointed to the controversial nature of these Soviet proposals, with many expressing the view that the use of observation satellites was within the range of peaceful, i.e., nonaggressive and beneficial, purposes and not interdicted by international law.³⁵⁷ Other delegates thought that the subject might better be discussed in the context of disarmament. Many states held that the Soviet proposal dealing with the use of satellites for purposes of war propaganda had failed to take into account the definite provisions of the unanimous General Assembly Resolution 110 (II), which

³⁵³ *Ibid.*, p. 9. The assertion by the Czechoslovakian delegate that “There had been no general agreement on such fundamental principles as the freedom and equal right of all States to explore and use outer space” seems to be entirely erroneous. *Ibid.*, p. 7.

³⁵⁴ *Ibid.*

³⁵⁵ *Ibid.*

³⁵⁶ *Ibid.*, p. 13.

³⁵⁷ The Soviet bloc, speaking through Hungary, has urged that the use of reconnaissance satellites constituted a delict under international law. See *infra*, pp. 271–295 for a detailed discussion of this problem.

had stated that communications facilities should not be employed for war propaganda purposes.³⁵⁸

In resumé, it may be said that several clearly distinguishable legal principles respecting outer space have been almost universally recognized. Of first importance has been the decision of nations, particularly the two major resource states, that in principle outer space must be used exclusively or solely for peaceful, i.e., nonaggressive and beneficial, purposes. Secondly, there has been almost universal acceptance of the principle that outer space is open to the free use and exploration of all nations. Third, there is almost universal agreement that neither outer space nor celestial bodies fall within the sovereignty of any state, and that they may not be made the subject of national appropriation. Fourth, there is almost universal agreement that outer space falls within a regime of structure of law, and that man's activities in his environment are governed by the principles and rules of international law and by the Charter of the United Nations. Finally, there is remarkable consensus that there is the need to enter into treaties covering a number of detailed rules relating to the safety, return, and liability of space vehicle personnel and the vehicles themselves. Opinion has so hardened as to the reasonableness of claims respecting the subjects of the prospective treaties that in their absence it appears reasonably clear that states will conform to the rights and duties set forth in the common provisions of the various draft proposals.³⁵⁹

While the legal subcommittee of the Committee on Peaceful Uses of Outer Space must be credited with contributing to the promulgation of customary rules of international law, as in Resolutions 1721 (XVI) 1802 (XVII), 1962 and 1963 (XVIII), and also with assisting in the unfolding of additional principles and new rules—through whatever form—it has fallen to the scientific and technological subcommittee to provide the rudimentary conventional international law for outer space. The two resource states, mindful of the terms of the Kennedy-Khrushchev letters of March 1962, have entered into technical agreements to exploit three particular phases of outer space activity. During the 1962 Geneva meeting

³⁵⁸ *Yearbook of the United Nations*, 1947-48 93 (1949). Compare, Whitton, "Propaganda and International Law," 72 *Recueil des Cours* 596 (1948); Wright, "The Crime of War-Mongering," 42 *A.J.I.L.* 128 (1948); Preuss, "International Responsibility for Hostile Propaganda against Foreign States," 28 *A.J.I.L.* (1934); Van Dyke, "The Responsibility of States for International Propaganda," 34 *A.J.I.L.* 58 (1940); Whitton, "Radio Propaganda—A Modest Proposal," 52 *A.J.I.L.* 739 (1958).

³⁵⁹ See pp. 458-460, 464-468, 480-482 *infra* for United States and Soviet proposals.

of the technical subcommittee of the Committee on the Peaceful Uses of Outer Space, Dr. Hugh Dryden, representing the United States, and Academician A. A. Blagonravov, representing the Soviet Union, discussed in detail the possibilities of cooperation in meteorology, a world magnetic survey, and satellite telecommunications. On June 8, they issued a joint communique in which it was announced that recommendations on these points had been forwarded to their governments.³⁶⁰ The bilateral agreement, consisting of a summary of understandings, was transmitted to the United Nations on December 5, 1962, in a letter signed jointly by the respective permanent representatives of the United States and the Soviet Union. The letter stated that the documents related "to an agreement reached on cooperation in the peaceful uses of outer space * * *"³⁶¹ This bilateral agreement, although not the first entered into between the United States and another state, was the first significant space agreement between the resource nations.

The agreement was to be implemented by scientists of the two states and provided for meteorological contributions by the United States and the Soviet Union, within their capabilities, toward the creation of a global weather satellite system for the benefit of all nations. Both states agreed to cooperate through the use of their own satellites in the preparation of a map of the earth's magnetic field. Finally, they agreed to cooperate in using Echo A-12, a NASA satellite, for a passive communications experiment.³⁶² These various activities are to be extended over a period of years, with close coordination with the World Meteorological Organization, International Telecommunications Union, COSPAR, and other international, as well as national, bodies. Many commentators have called attention to the comparative ease with which this agreement was achieved in comparison with the difficulties engendered in the political-legal forum.³⁶³

3. Role of Other International Organizations

Outer space has also attracted the attention of the United Nations' Economic and Social Council as a result of its responsibility in the fields of science and technology. Paragraphs C and D of General Assembly Resolution 1721 (XVI), Parts III and IV of

³⁶⁰ U.N. Doc. A/AC.105/5, Annex III 1.

³⁶¹ U.N. Doc. A/C.1/880; *NASA News Release No. 62-257*, Dec. 5, 1962; Annex 22, *infra*, pp. 482-488.

³⁶² *Ibid.*, 3-6.

³⁶³ This fact has also been remarked on frequently in the Committee on the Peaceful Uses of Outer Space.

Resolution 1802 (XVII), and Parts III and IV of Resolution 1963 (XVIII) impress responsibilities on the World Meteorological Organization (WMO) and the International Telecommunication Union (ITU), which have important interests in the peaceful uses of outer space. Both organizations have made substantial inquiries into space problems, have regulatory activities which are intended to maximize the use of space capabilities, and have cooperated with the UN through the submission of reports to the General Assembly. Representatives of WMO, ITU, and UNESCO have appeared before UN committees and have reported both orally and in writing on their activities in their areas of special interest. The International Atomic Energy Agency (IAEA) and the World Health Organization (WHO) have also cooperated with the UN committees dealing with outer space.

Upon the invitation of the UN, the private International Council of Scientific Unions, through its Committee on Space Research (COSPAR), has participated in the work of the Committee on the Peaceful Uses of Outer Space as an observer. All such agencies, public and private, have engaged in developing and planning educational and training programs on meteorological and telecommunications techniques and have also advised various UN bodies of their findings and have made appropriate recommendations.

4. Bilateral Treaties and Other Agreements Dealing With the Use and Exploration of Outer Space

The United States, in order to implement its space programs and policies, has entered into a host of international agreements with many states. The agreements have been mainly on a bilateral basis, dealing generally with technical as opposed to political subjects. Although the agreements have not explicitly acknowledged such fundamental principles as those providing that outer space may be used only for peaceful purposes, or that it may be used and explored by all states without right of appropriation, or that it is governed by international law and the terms of the UN Charter, these agreements do, nonetheless, constitute support of these principles by clear implication.

The extent to which the United States is engaged with other states in the many fields of space research and scientific development is vast. Much of this international cooperation is the product of explicit international consent, which is marked by varying degrees of formality. The extent of such cooperative effort was described by

Senator Gore to the United Nations on December 3, 1962, when he described the range of such activities as follows:

Today, happily, more than fifty nations are associated with the United States on one or another aspect of this important work. There are over two dozen space tracking and data acquisition stations in nineteen separate political areas in support of United States scientific programmes, the majority operated wholly or in part by technicians of the host countries. Scientists of forty-four nations are working with our space agency NASA in ground-based research projects in meteorology, communications, and other space sciences, directly utilizing United States satellites. Thirteen nations are engaged with us in actual flight projects in which experiments, jointly determined by the scientists of both countries, are sent into space either on vertical sounding rockets, or in earth satellites. * * * These have all been truly cooperative experiments, the results of which are open to all, to every nation, to every citizen of the world.³⁶⁴

The first United States bilateral agreement dealing with space-age problems was with the United Kingdom. On July 21, 1950, the two states entered into "The Bahamas Long Range Proving Ground" agreement providing for a flight testing area for vehicles launched from Cape Canaveral to a point north of the Caicos Islands.³⁶⁵ With the advent of the International Geophysical Year (IGY), numerous agreements were entered into dealing with technical cooperation, including the installation of tracking and telemetering facilities in a substantial number of countries. These were formal agreements between states and were in addition to the many informal arrangements between scientists and technologists of different countries.

The formal agreements, at first negotiated by personnel of the Department of State, seldom achieved formal treaty status. It was more common to effect exchanges of notes, memoranda, and letters between representatives of United States diplomatic missions and foreign offices. However, with the establishment of the National Aeronautics and Space Administration in the United States on July 29, 1958, NASA has become the agency through which technical space agreements with foreign states have been processed. Illustrative of NASA negotiated agreements, often described as a "Memo-

³⁶⁴ U.N. Doc. A/C.1/PV.1289, 21.

³⁶⁵ MacChesney, *U.S. Naval War College International Law Situation and Documents*, 1956, 611 (1957). TIAS 2099; 1 UST 545; 97 UNTS 261; Cmd. 8109.

randum of Understanding," and not referred to the United States Senate, as would be the case of a formal treaty, have been those with the British Post Office, the Brazilian Post Office, the Brazilian National Committee for Space Activities, the Italian Space Commission (in this instance the memorandum was made public through the exchange of notes signed by the Vice-President of the United States and the Italian Foreign Minister), the French National Center for Space Studies, the Indian Department of Atomic Energy, and the Japanese Ministry of Posts and Telecommunications.³⁶⁶

The most common subject of these agreements relates to the tracking of space vehicles and orbiting earth satellites. At the time of this writing such agreements had been entered into with the following sixteen states: Argentina, Australia, Brazil, Canada, Chile, Ecuador, United Kingdom, India, Iran, Japan, Mexico, Netherlands, Nigeria, Peru, South Africa, and Spain.³⁶⁷ The agreements at first dealt with rocket probes. Later, as the art increased, provisions were made for missiles and orbiting space vehicles. The number of such agreements with a given state varies considerably: from one with Mexico to more than fifteen with the United Kingdom.

Some of the agreements deal only with the right to establish and use tracking stations in other countries, while others make detailed provision for a substantial number of rights. In the latter category, for example, the agreement of February 10, 1961, between the United States and the Federation of the West Indies (titled "United States Defense Areas in the Federation of the West Indies") provided for the "right to maintain and operate within the defense areas an electronics research and test station, including its associated instrumentation, detection and communications systems. The United States government shall also have the right to launch, fly and land test vehicles."³⁶⁸ The agreement, with respect to these rights, also provided that "it is understood that the electronics test and research station which the United States Government will operate pursuant to this provision will be used in connection with United States test and research programmes in the fields of electronic surveillance and communications. Research and test operations at the station will include detection, tracking, telemetry, data read-out, reception, transmission and communications related to both missile and space programmes."³⁶⁹

³⁶⁶ All such agreements have been published either in TIAS beginning with 2099 of July 21, 1950, or in NASA News Releases.

³⁶⁷ *NASA Press Release No. 63-10, January 27, 1963*, p. 5.

³⁶⁸ TIAS 4734.

³⁶⁹ *Ibid.*

In addition to the sixteen states with which the United States has entered into tracking agreements, space agreements have also been reached with eight others: Paraguay, Chile, Federation of the West Indies, France, Federal Republic of Germany, Italy, Sweden, and the Soviet Union. These agreements have been bilateral in form except for the NASA agreement relating to the launching of the relay experimental communications satellite between the United States and six other states, namely, the United Kingdom, France, Italy, Federal Republic of Germany, Brazil, and Japan.³⁷⁰

Illustrative of the wide-ranging developments in the area of space science and technology have been international agreements on many subjects, which—so far as the United States has been concerned—have developed in the following chronological sequence: proving ground for guided missiles, tracking of guided missiles, meteorological test systems, tracking stations for space vehicles, damages to fisheries in missile test programs, radio communications, experimental communications satellites, sampling radioactivity, cooperation in space research, special agreements for Midas, Relay, and Rebound, radio regulations, joint equatorial launch, equatorial sounding rocket facility, and the United States-Soviet agreement dealing with a world geomagnetic survey as well as with meteorology and passive communications. These developments cover the period from 1950 through 1963.

Many other states have entered into international agreements dealing with the peaceful use and exploration of outer space. Perhaps the most notable has been the multilateral agreement between Australia, Belgium, France, the Federal Republic of Germany, Italy, Holland, and the United Kingdom encompassing a European Organization for the Development and Construction of Space Vehicle Launchers.³⁷¹ Another example has been the agreement establishing the European Space Research Organization consisting of Belgium, France, the Federal Republic of Germany, Italy, Holland, the United Kingdom, Spain, Sweden, and Switzerland.³⁷²

All of the explicit space agreements have been based on the fundamental assumption that launches from the surface of the earth, transit through airspace, transit through outer space, and return to earth—when such launches have been for peaceful, i.e., non-aggressive and beneficial, purposes—have been and are legally permissible. None of these agreements specifically refer either to the

³⁷⁰ *NASA News Release No. 62-258*, December 11, 1962, p. 15.

³⁷¹ Cmnd. 1731, Misc. No. 17 (1962); Cmnd. 1895, Treaty Series No. 68 (1962). For discussion, see pp. 81-84 *supra*.

³⁷² Cmnd. 1840, Misc. No. 30 (1962). For discussion see pp. 82-84 *supra*.

missible. None of these agreements specifically refer either to the creation of a new, or the promulgation of a pre-existing, rule or principle of law. In the context of the practices and usages current at the time these explicit agreements were executed, including the development of a customary international law of outer space during and after the IGY, it is clear that states have asserted the legal right to engage in the peaceful use and exploration of outer space. In doing so, states have supported their conduct on the legal basis that the forms of conduct actually engaged in were legally permissible in view of the fact that there were no valid legal inhibitions then existing which could rightfully—and thereby legally—have denied to them the right to engage in such conduct. In short, in the absence of effective principles and rules prohibiting the use and exploration of outer space for peaceful purposes, the type of launches actually engaged in—being peaceful in their nature—were at the time of these express agreements considered to be lawful. The subsequent space practices, the continued force of these agreements, and the consensus arrived at in the United Nations continue to support the view that outer space may be used solely or exclusively for peaceful, i.e., nonaggressive and beneficial, purposes.

This conclusion may also be supported by general principles of law and by reference to suitable legal analogies. The impact of general legal principles upon the development of a law of outer space will be discussed in the following section.

5. General Principles of Law

With the promulgation by the United Nations of basic principles of law regulating activities in outer space, it has become one of the functions of general principles of law to provide support for such space law principles. General principles must also assist in the extension and implementation of those principles upon which general agreement has already been reached. Among the general principles of law which can assist in the development of an adequate legal structure for space activities are estoppel, respect for acquired rights, good faith and nonabuse of rights, and the general principles of equity.

a. Estoppel

The principle of estoppel, widely accepted in the jurisprudence of municipal law, has received much attention in international law in recent years. This principle, by its inherent merit and by general acceptance, has become a general principle of international law recognized by civilized nations.³⁷³ It depends upon the acceptance

³⁷³ MacGibbon, "Estoppel in International Law," 7 *Int'l & Comp. L.Q.* 468 (1958).

of good faith as a guide to interpersonal and international relations, and depends upon the concept of consistency as contributing to stability and predictability in international conduct.

Several forms of estoppel have been identified. It may be established through formal and explicit written processes, such as treaties, exchanges of notes, resolutions, declarations, or any other written agreement.³⁷⁴ The force of the principle has been noted on several occasions where the international agreement has taken explicit form, and the World Court has emphasized the validity of the doctrine.³⁷⁵

Estoppel is also the product of usage or conduct, and, as such, has close affinity with the doctrines involved in the development of customary international law. Estoppel in this context is related to the need for consistency and inhibits states from changing courses or patterns of conduct whenever by so doing there would be unreasonable harm or detriment to other states which had so arranged their conduct as to benefit from practices supported by implicit behavior. The principle of estoppel is broad enough to require states to assert affirmatively their rights and freedom of action.³⁷⁶ A state may not only be estopped by its affirmative conduct, but may also be estopped by reason of its failure to act after having been put on due notice of the development of a pattern of conduct.

For the principle of estoppel to be operative at least three essential conditions must exist. First, the meaning of a state's conduct—either in the form of a writing or practice—must be clear and unambiguous. Second, if the conduct is in express form, it must be voluntary, unconditional, and authorized. And third, there must be good faith reliance to the benefit or detriment of the various participants.³⁷⁷

The principle of estoppel supports the legal right and duty relationship that states enjoy in regard to the use and exploration of outer space for peaceful purposes. The total past conduct of states has been that of the peaceful uses of space. This, in turn, has provided them with the right to rely upon such total conduct to the

³⁷⁴ Bowett, "Estoppel Before International Tribunals and its Relation to Acquiescence," 33 *Brit. Yb. Int'l L.* 180 (1957).

³⁷⁵ *Eastern Greenland Case*, P.C.I.J. Reports, Series A/B, No. 53, 71-73 (1933); *Jurisdiction of the European Commission of the Danube Case*, P.C.I.J. Reports, Series B, No. 14, 23 (1927); *Diversion of the Water from the Meuse Case*, P.C.I.J. Reports, Series A/B, No. 70, 25 (1937).

³⁷⁶ MacGibbon, *op. cit.*, 480.

³⁷⁷ Bowett, *op. cit.*, 180-188. *Interpretation of Peace Treaties Case*, I.C.J. Reports 190 (1950); *Serbian Loans Case*, P.C.I.J. Reports, Series A, Nos. 20/21, 39 (1929). Lauterpacht, *The Development of International Law by the International Court* 204 (1958).

end that they may lawfully rely on the use of space for nonaggressive and beneficial purposes. By their past conduct, states have become estopped to deny to each other the right to engage in peaceful uses. Further, since there has developed a legal consensus that outer space must be used solely or exclusively for peaceful purposes, and conduct has followed this pattern, it may be urged that states have estopped themselves from using space for nonpeaceful purposes. Under such circumstances, states would be estopped from claiming legal support for the use of outer space for nonpeaceful purposes. It is thus submitted that the broad claim, now alive in the international forum, that outer space be used only for given purposes and upon certain conditions, has been buttressed by the principle of estoppel.

b. Respect for Acquired Rights

The general principle that law will respect acquired rights is based on the same considerations which underlie the doctrine of estoppel, namely, that rights acquired over a suitable period of time must be respected since this conduces to an orderly community. It enhances peaceful change, provides for conditions of mutuality in which the concept of good faith can be maximized, and acknowledges the expediency of conforming to ongoing expectations. On the basis of this principle, states are permitted to make plans for future activities in space with some assurance that they will be able to implement them.

This principle works in two ways respecting space activities. First, it bolsters the principle that outer space may be used for peaceful, i.e., nonaggressive and beneficial, activities. This necessarily takes into account the launching, orbiting, and return to earth of space vehicles. Secondly, insofar as the principle has been established that neither space nor celestial bodies may be made the subject of appropriation or sovereign control, the principle serves as a limitation upon the acquisition of such interests. As in the case of estoppel, so also as concerns the doctrine of respect for acquired rights, judicial opinions uphold such principles.³⁷⁸

c. Good Faith and Nonabuse of Rights

The commonality of the concept of good faith in man's relationships extends throughout his total experience. It is more than a

³⁷⁸ *Certain German Interests in Polish Upper Silesia Case*, P.C.I.J. Reports, Series A, No. 7, 28 (1926); McNair, "The General Principles of Law Recognized by Civilized Nations," 33 *Brit. Yb. Int'l L.* 1-19 (1958); Stuyt, *The General Principles of Law as Applied by International Tribunals to Disputes on Attribution and Exercise of State Jurisdiction* 20 (1946).

general principle of international law, and in the view of many is regarded as a foundation of all law as well as the ultimate guide to all social relationships. Innumerable court decisions attest to the view that the principle of good faith is the standard underlying all international law.³⁷⁹ As such, it requires states to conform with reasonable expectations induced either through general customary international law or through express international agreements.

The right and duty relationship is central to the concept of good faith, for without the existence of such a relationship, the principle of good faith would be lacking in an environment in which it could serve the interests of order and stability, as well as other significant human values. The relationship between good faith and legal rights has been noted by the World Court, which has stated that "it is possible to see an indirect approach to the principle prohibiting abuse of rights in the frequent affirmation of the duty of States to act in good faith in the exercise of their rights."³⁸⁰ Rights, once established, are suited to judicial proof, as are abuses of rights. The World Court has ruled that the party asserting that an existing right has been abused has the duty of proving it and that the existence of an abuse "cannot be presumed by the Court."³⁸¹

d. *Equitable Principles*

Discussions in the United Nations have made it clear that outer space must be used for the benefit of all mankind, and that such benefits must be made available to resource and nonresource nations alike. There is also general consensus that space benefits must be as broadly and equitably distributed as is possible. The principles of equity may be called upon to support the claims of many nations that activities in space be as extensive and as permissive as possible and that exclusive uses be held to a fundamental minimum. These foregoing general principles—and others might be mentioned, such as *Pacta Sunt Servanda*, the right to international peace and security, the right of self-preservation, and sovereignty under the law—are all related to each other. Their importance lies in the fact that they have, in the past, contributed to the necessary ordering of international relations. They have served as guides to states in making and compromising claims in the international forum. Additionally, they have been recognized and used by international tribunals.

³⁷⁹ *Norwegian Loans Case*, I.C.J. Reports 53 (1957). Compare Cheng, *The General Principles of Law as Applied by International Courts and Tribunals* iii (1953).

³⁸⁰ *Conditions of Admission of a State to Membership in the United Nations*, I.C.J. Reports 79–80 (1948).

³⁸¹ *The Free Zones Case*, P.C.I.J. Reports, Series A, No. 24, 12 (1930).

The application of these principles to the emerging law of outer space may be considered a foregone conclusion. Through their force they will strengthen the more fundamental principles applicable to the use and exploration of outer space. Through their presence and influence, existing and future space law principles—as well as more detailed rules—will take on greater specificity and meaning. Through their persuasive influence they will have a major role in bringing the new space principles and rules into the seamless web of all the law.³⁸²

e. *Private Efforts to Supply Space Law Principles*

Individual lawyers and associations of lawyers, throughout the world, have made many important contributions to the development of principles applicable to outer space. The impact of their views upon the emerging law of outer space has been so important, and will continue to be so impressive, that reference must be made to their suggestions and recommendations. Their various drafts often rather closely approximate the views expressed in the United Nations, and in some instances are intentionally quite tentative.

In 1960 the Committee on Aeronautics of the Association of the Bar of the City of New York promulgated "Some Tentative Provisions for International Agreements on Space Activities."³⁸³ Taking the form of a suggested space law agreement, the proponents set forth a very broad program for the establishment of a legal regime for outer space. The draft emphasized the legal right to the free use of space. It further provided that space activities, as defined, might be carried on in airspace, without regard to national sovereignty in the airspace, but that such space activities could not "unduly interfere with national uses of air space for security and navigation."³⁸⁴ Although the proponents of the agreement reached no decision as to the most acceptable line dividing airspace from space, they did acknowledge the need for reaching such a decision. There was agreement that states would not be able to exercise national jurisdiction above a certain point, measurable in miles. Further, for those who favored the establishment of an appropriate boundary in the near future, there was a good consensus that the boundary

³⁸² It is implicit that reference to general legal principles in the space age will contribute to a better community of nations and men. Compare, Schlesinger, "Research on the General Principles of Law Recognized by Civilized Nations," 51 *A.J.I.L.* 753 (1957); compare, Friedmann, "The Uses of 'General Principles' in the Development of International Law," 57 *A.J.I.L.* 279 (1963).

³⁸³ *Forum on Space Law*, (mimeo.), (March 24, 1960).

³⁸⁴ *Ibid.*, p. 3, (Article B).

should be at a fairly low altitude, in the range of from 25 to 50 miles.

The Committee's provisions, as with other private proposals, advanced claims for national rights, while taking into account limitations upon such rights because of broad community interests. This was reflected in the Committee's suggestions regarding the central problem of the peaceful use of outer space. Their draft provided, under the heading Peaceful Uses of Space:

The High Contracting Parties declare their adherence to the principle that the conduct of space activities should be open and orderly. They denounce the use of space for purposes of aggression. They reserve all rights of security and self-defense conferred by or recognized under the Charter of the United Nations or otherwise under international law.³⁸⁵

The draft then made provision for the prohibition of the use of space for mass weapons, including an inhibition against the placing into orbit or the stationing in space of such weapons.

Many references were made concerning the need for cooperative activity by nations in outer space within the draft. Among the subjects treated under this heading were dissemination of space data, notice of launchings, orbital or flight tracks, reentry, distribution of information on identification and registration, cooperation in the repossession of spacecraft and the repatriation of personnel, notice as to location of launching sites with a description of those used as orbital sites and those used for ballistic launches. In this last subject area, a provision for the inspection of orbital sites and for the detection at or near ballistic sites of activities other than "space activities" was also made. In order to provide for the management of such inspections, and for other activities, the draft provided for an International Space Agency, whose duty included cooperation with existing international organizations having to do with space activities. The Agency was accorded operational functions, including the establishment of world data centers, the management of satellite tracking stations, and the organization and direction of joint space programs undertaken by two or more of the signatories. Pursuant to the draft all participating nations would undertake rights and duties concerning radio spectrum management (within the larger reference of the International Telecommunications Union), concerning disposal of spent spacecraft, respecting liability for damages, and the minimization of adverse effects of space contamination.

³⁸⁵ *Ibid.*, p. 4, (Article C).

Under the heading "Territorial Claims to Celestial Bodies," the group proposed that celestial bodies should not be subject to "exclusive appropriation by any person, organization, or State on earth," but that objects launched from earth should remain the property of the launcher.³⁸⁶ The proposal also stated "Any exploration, occupation, development, use, and exploitation of the resources of such celestial bodies shall be conducted so as not to endanger such activities conducted by others."³⁸⁷ The draft also provided for a modification of or extension of this principle by a vote of two-thirds of the members of the General Assembly of the United Nations. Additionally, it made provision for the submission of disputes, not resolved by other means, relating to the interpretation or application of the proposed convention, to the International Court of Justice. Finally, the draft imposed upon the proposed agency the duty of reviewing continuously the terms of the agreement with the view to making recommendations for changes to the signatories.

This proposal, while in agreement with the basic principles set forth in UN Resolution 1721 (XVI) of December 20, 1961, went considerably further. Like other nonpublic proposals, this one emphasized the urgent need for the development of a structured and precise law for outer space. Additionally, private proposals have stressed the need for the management of space problems through either existing or new agencies. This particular proposal called for the construction of a new agency, while others have urged that such functions be performed within the existing framework of the United Nations.

The International Law Association at its 49th Conference, August 1960, adopted a resolution which had been proposed by its subcommittee on air sovereignty and the legal status of outer space. This proposal, like the one previously described, antedated Resolution 1721 (XVI), but did take into account the decisions previously reached at the United Nations. The Association sought to provide principles of law which would serve as the basis for an express international agreement, and it should be noted that the Association's resolution was adopted before it became generally recognized that its principles were, even at that time, being formulated through the processes of general customary international law. The Association assigned priority to the formulation of the following principles:

- (a) Outer space and celestial bodies should be utilized only for peaceful purposes to the greatest common profit of all

³⁸⁶ *Ibid.*, p. 13, (Article U).

³⁸⁷ *Ibid.*

mankind in accordance with the principles of the United Nations Charter;

(b) Outer space may not be subject to the sovereignty or other exclusive rights of any State.³⁸⁸

The Association recommended that states should enter into explicit agreements affirming the above principles. In its view, such agreements should include provisions whereby states would not make claims of sovereignty or other exclusive rights over celestial bodies. Finally, the Association expressed an interest in securing a definition of the lower limits of outer space and in obtaining an international mechanism for ensuring observance of the foregoing principles.

The Inter-American Bar Association has also adopted a resolution, titled in part "Magna Carta of Space," which has had an influence on the development of space law principles. Meeting early in 1961, the Association agreed on a resolution which called for an express international agreement along the lines proposed very widely then and now. The resolution pointed to the urgency of creating "an international code of law for the benefit of the nations of the world with the avowed purpose of avoiding war and preserving peace."³⁸⁹ The detailed contents of the space Magna Carta were based upon the view that all states, pursuant to Article 2 (1) of the UN Charter, were equally sovereign and had an equal interest that "Outer Space be used for peaceful purposes only."³⁹⁰ Thus, part (f) of this resolution stated that "Outer Space shall be used solely for peaceful purposes with freedom of exploration and exploitation thereof given to all peoples for the benefit of mankind."³⁹¹ The final paragraph, (r), resolved that "War, in, by, through space is hereby barred forever."³⁹²

The resolution called for space to be free for peaceful uses, and employed the distinction frequently used by writers on the subject relating to *res nullius* and *res communis*. Free or *res communis* space would deny rights of appropriation and exclusive control by one nation, whereas, according to the resolution, the *res nullius* principle would authorize rights of appropriation through the establishment of principles of discovery, habitation and settlement. It there-

³⁸⁸ *Legal Problems of Space Exploration, a Symposium, supra*, note 10, Chapter I, at 679.

³⁸⁹ *Resolutions, Recommendations, and Declarations Adopted by The Twelfth Conference of the Inter-American Bar Association* 3 (1961); *Congressional Record*, May 11, 1961.

³⁹⁰ *Ibid.*, 2.

³⁹¹ *Ibid.*

³⁹² *Ibid.*, 3.

fore suggested a zonal approach to outer space with the view that airspace would be subject to sovereign control, that outer space would be a *res communis*, and that between the two there would be a zone called "Neutralia." In the latter area the right of innocent passage was to be recognized without offense to sovereignty. No specific reference was made, however, to the probable need for passage by spacecraft through the airspace of another state.

Reference was made to such typical subjects as the need to identify, register, and establish the intent of space launches, reentry and landing rights, allocation and control of radio frequencies, routings to avoid hazards between spacecraft and aircraft and between different spacecraft, and liability for damages. Unique provisions related to the establishment of an international insurance fund under the control of an international organization for the payment of damages to those harmed by the operation of space vehicles, for the policing of outer space in order to prevent violations of individual and national rights, for the settlement of disputes through an arbitral procedure designated by the UN, and, finally, it was resolved that "The people of the earth do hereby declare that they recognize the rights of sovereignty, ownership and control of any other planet by the inhabitants thereof."³⁹³

The American Bar Association, at the instance of its Section of International and Comparative Law, adopted a resolution in August 1962, relating to international space law principles. The House of Delegates acknowledged and approved the adoption of the principles contained in Resolution 1721 A (XVI) of the UN General Assembly. It also urged as United States policy that through the United Nations there be:

- (1) the continued clarification by the United Nations of appropriate legal principles with respect to the uses of outer space; and
- (2) the drafting of international agreements covering specific problems relative to space activities, commencing with subjects of immediate practical importance for which agreed solutions are most probable;
- (3) the developing of cooperative programs among the nations of the world in their mutual interest in such fields as weather forecasting and communications.³⁹⁴

³⁹³ *Ibid.*

³⁹⁴ "Proceedings of the House of Delegates; San Francisco, California, August 6-10, 1962," 48 *American Bar Association Journal* 990 (1962).

One of the most comprehensive private efforts to formulate a basic understanding of space law problems has been the work of a British Study Group on the Law of Outer Space. Their results, entitled "Draft Code of Rules on the Exploration and Uses of Outer Space," was published in 1962 by the David Davies Memorial Institute of International Studies.³⁹⁵ The effort is worthy of notice because it assumes that an international code is timely, and because, like the present study, undertakes to relate the physical capabilities of spacecraft to the principles put forward. The first principle of the group takes into account the need to effect a practical division between outer space and airspace. It is their conclusion that the relatively low altitude of 50 miles might serve as "the limit of sovereignty and the beginning of outer space."³⁹⁶ This recent interest in a relatively low boundary between the area of *res communis omnium*, defined as outer space and the celestial bodies therein when free for exploration and use by all, and the even lower *res nullius* area is itself noteworthy. As the practical capabilities of launched spacecraft and the X-15 and comparable hybrid type craft become more fully understood—with their capacity to orbit at least once at close proximity to the earth—earlier proposals sponsoring relatively high boundaries are being abandoned. Concurrently with this development is an increasing demand for national control over areas immediately superjacent to areas where conventional aircraft regularly operate. This demand has also been accompanied by demands that launched and hybrid craft be given the right of innocent passage while engaged in landing procedures, or that it be treated as aircraft in all respects.

The proposed code by the British Study Group has adopted the two principles contained in the General Assembly Resolution 1721 A (XVI). Further, it has assumed that in the course of international cooperation on space activities, numerous international agreements will become binding. The draft code has also proposed that states and their nationals will have equal rights in the exploration and use of outer space, that states and international bodies are not "precluded from employing military personnel or equipment for scientific and peaceful purposes,"³⁹⁷ and that no "state or international body shall put the airspace, outer space or the celestial bodies, to uses which cause, or are likely to cause, modifications of the environment of mankind unless the prior agreement of the appropriate

³⁹⁵ "Draft Code of Rules on the Exploration and Uses of Outer Space," *The David Davies Memorial Institute of International Studies* 1-17 (1962).

³⁹⁶ *Ibid.*, 7.

³⁹⁷ *Ibid.*, 9.

international body has been obtained that such modifications are acceptable.”³⁹⁸

Many of the proposed principles are directly related to a broad concern respecting the presence of weapons in space. Thus, the draft provides that “No spacecraft carrying any type of warhead or otherwise designed as a weapon for use against targets on the earth or in the airspace, shall be placed in orbit around the earth, or celestial body, or be carried in or launched from any space station or celestial body.”³⁹⁹ Presumably omission of outer space targets was intentional, and this is curious in view of the proposal that “The establishment of military stations upon any celestial body and the use of such stations or of a celestial body for the purposes of war is prohibited.”⁴⁰⁰ and that “The testing of any nuclear device or the disposal of radioactive waste upon any celestial body is prohibited.”⁴⁰¹ The draft also prohibits contamination of both the earth and celestial bodies, requires control of radio transmissions, permits the establishment of celestial stations to facilitate exploration and use, calls for the placing of such stations under the supervision of the United Nations subject to the right of the establishing state to exercise jurisdiction over its personnel in the station, and authorizes an international body to establish such a station and, by international agreement, to exercise jurisdiction over its personnel in the station.

The inhibition against the launch or orbiting of weapons for use against targets on the earth or in airspace covered conventional as well as nuclear, chemical, or bacteriological devices. However, in view of the general acceptance of the principle that outer space must be used for peaceful, i.e., nonaggressive or beneficial, purposes, the draft does not disapprove of the right of a state to employ surveillance or reconnaissance satellites, which, as the draft acknowledges “may primarily serve military purposes, yet have the advantage that they contribute to an ‘open world’ and so increase rather than diminish security.”⁴⁰²

The draft code takes into account, in a very practical sense, the fact that space vehicles in returning to earth may occupy flat trajectories, closely proximate to the surface, for extended areas. This means that such craft may transit through areas commonly occupied by hybrid craft as well as conventional aircraft, thus posing the problem of the height of the sovereignty and control of the sub-

³⁹⁸ *Ibid.*, 11.

³⁹⁹ *Ibid.*, 12.

⁴⁰⁰ *Ibid.*

⁴⁰¹ *Ibid.*

⁴⁰² *Ibid.*

jacent state. It also raises questions of traffic control for descending spacecraft. The British proposal sought to apply existing air law rules to the landing procedures of spacecraft, and urged that

No spacecraft launched from the territory of any State may at any stage of its flight enter the airspace of another State without the consent of that State: provided that

a. such consent shall not be withheld if prior notice has been given to that State of the intended flight, and it has been shown to its satisfaction that the flight is solely for scientific and peaceful purposes and shall be so controlled as to obviate danger to aircraft;

b. any craft capable of operating both as a spacecraft and as an aircraft shall for the purposes of its use of the airspace be deemed to be an aircraft;

c. a manned spacecraft may enter the airspace without prior consent for the purpose of making an emergency landing, but shall be subject to the provisions of Section b.⁴⁰³

The proposal then suggests that it would be appropriate for any state to divert or destroy any spacecraft which might enter its airspace without having previously received permission to do so. It further suggests the possibility of liability or damages as the result of unlawful diversion or destruction. Provisions for the registration of spacecraft by national and international authorities, the assignment of registration marks, registration as evidence of nationality, and registration as proof of ownership are also incorporated. The operation of spacecraft by private persons or corporations is acknowledged and provisions for the licensing of such craft only to nationals are made. The purpose of this proposal is to insure a continuing state of responsibility for private operators. However, other portions of the draft proposal make it clear that the public entities, states or international organizations, responsible for the launching of spacecraft should be liable for injury, damage, or loss caused by the craft or any of its parts. Liability is limited to fifty million United States dollars. Finally, this British draft calls for the assistance and return of personnel and the spacecraft to the launching authority. In the event of dispute, not otherwise resolved, the code provides for the jurisdiction of the International Court of Justice.⁴⁰⁴

The importance of establishing and recognizing suitable principles for an effective law of outer space has been noted by many private

⁴⁰³ *Ibid.*, 14.

⁴⁰⁴ *Ibid.*, 15-17.

commentators. Authoritative expressions have been presented in many forums, particularly at the meetings of the International Astronautical Congresses, the proceedings of which have been published each year since 1959 in the well-known colloquia on the law of outer space.⁴⁰⁵ Responsible views have also been presented during the annual meetings of the American Society of International Law, particularly in 1956, 1958, 1961, and 1963.⁴⁰⁶

The views expressed by legal authorities on these occasions have reflected the attitudes and policies put forward herein under the heading of "General Principles of Law," and the positions taken at the United Nations, by the Space Forum of the Association of the Bar, by the International Law Association, by the Inter-American Bar Association, by the American Bar Association, and by the Davies Study Group. The commonality of viewpoint, and the fairly general recognition of urgency, suggest that many principles have been recognized and clarified. It also suggests that serious efforts will continue to be made to refine principles into rules, so that there will soon be a rather substantial amount of treaty law providing a certain legal structure for many outer space activities. It may be hoped, as many have suggested, that progress should go forward around such fundamental principles as freedom of use, with resulting diversity of use, peaceful cooperation with the widest possible distribution of benefits to all mankind, and, to the extent that disputes may arise, upon the basis of third party adjudication. Rejection of this last mentioned principle may be said to constitute a basic repudiation of law *per se*.⁴⁰⁷

6. The Problem of Analogies

In the development of the law of outer space many references have been made to the use of analogies. The constantly recurring theme of analogy has, in effect, been rivaled only by the variety suggested. These have included the high seas, territorial waters, contiguous zones, continental shelf, artificial islands, airspace, land, the Antarctica, and international rivers and river basins. A very broad area of man's past experience is suggested by this variety and how it has been brought to bear—in large or small amounts, depending on the analogy—on man's diverse interests and activities in space. However, it must be remembered that the device of analogy is but a means of making a comparison, and that, as analogy, it

⁴⁰⁵ *Proceedings* of the respective Colloquia.

⁴⁰⁶ *Proceedings* of the annual meetings.

⁴⁰⁷ Crane, "Law and Strategy in Space," 6 *Orbis* 287 (1962).

offers no precedent. When analogizing, one must be alert to the fact that in the compared situations there may exist major differences as well as the possibility of some striking similarities. Appropriate emphasis must be placed upon each during the process of applying the principles and rules conditioned by historic forces derived from one set of situations to this newly exploitable environment.

a. *High Seas, Territorial Waters, Contiguous Zones, Continental Shelf, and Artificial Islands*

In order to understand that sea analogies are meaningful for outer space, it is well to recall that the law of the sea contains principles and rules which have effectively served the interests of peoples, states, and the world community, and have offered to nations a maximum of security in accord with their need for ongoing self-protection. The same principles and rules have provided for a wide sharing of a *res communis omnium* with substantial benefits to mankind.⁴⁰⁸ When an experience has been so generally beneficial and satisfactory, it is but natural to turn to it and endeavor to repeat it in another environment.

With the development of man's space capabilities, first taking the form of rockets and ballistic missiles, it became obvious that early devices possessed enormous military significance. In this context, the law of the sea was soon called upon to provide support for the broad idea that there should be a national right to protect a state against threats to national security from outer space, and, in particular, that a state's sovereignty should be extended to great distances out into space. Thus, the zonal concepts of sea law were adduced in support of private views that there should be national sovereignty above the earth's surface to distances varying from Haley's aerodynamical boundary⁴⁰⁹—about 52 miles above the surface—to Cooper's proposals, often modified, ranging between 52 to 300 to 600 to an indefinite number of miles, modified by more recent pro-

⁴⁰⁸ McDougal and Burke, *The Public Order of the Oceans* 1-88 (1962); Schachter has noted the relevance of the international law of the sea to the emerging international law of outer space. Further, "the analogy of the high seas can only be useful if full regard is had for the differences in conditions, techniques and objectives between maritime and 'spatial' activity. With this reservation, analogy (or the extension of traditional concepts) may serve the useful function of facilitating the acceptance of legal rules in novel situations." Schachter, "A Preview of Space Law Problems," 1958 *New York County Lawyers Association Bar Bulletin* 34 (June 1958); *Legal Problems of Space Exploration, A Symposium. Supra*, note 10, Chapter I, at 346.

⁴⁰⁹ Haley, "Survey of Legal Opinion on Extraterrestrial Jurisdiction," *Third Colloquium*, Appendix 5, p. 54; *Legal Problems of Space Exploration, A Symposium, supra*, note 10, Chapter I, at 733.

posals suggesting only 80 to 100 miles.⁴¹⁰ The literature contains many varying distances as related to sovereignty. The early proposals were based largely on speculation concerning the capabilities of space devices; all being heavily influenced by concerns for national security. However, the legal-political process could not, in the early stages, receive immediate guidance from science and technology relative to ultimate space capabilities, nor as to measurements of the presence of precise atmospheric amounts at great distances.

Thus, for a while, lasting down to about 1960, emphasis turned away from the effort to fix precise limits within which airspace type sovereignty might be exercised over space devices. During this time it was recognized that national protective measures were not restricted to areas over which sovereignty was exercised,⁴¹¹ because of the realization that so far as space devices were concerned their potential danger was not at all related to mere "overness." This conclusion was in part based on the fact that where distances are great, substantial difficulties exist in the preparation of orbiting space devices for potentially aggressive military purposes. Additionally, it became apparent that space devices could orbit for extended periods with perigees as low as 100 statute miles, and, that perigee heights might be further considerably reduced, at least for relatively small satellites and for at least a relatively small number of orbits.

These factors have produced several results. For example, they have somewhat strengthened the demand for fixing a relatively low line to which airspace sovereignty may extend, and thereby an equally low line for the legal regime of outer space. Additionally, they have supported the wisdom of the broadest of the sea law

⁴¹⁰ Cooper's views may be consulted in "High Altitude Flight and National Sovereignty," 4 *International Law Quarterly* 418 (1951); "Legal Problems of Upper Space," 1956 *Proceedings of the American Society of International Law* 92 (1956); *The Times* (London), September 2, 1957, p. 9; "Missiles and Satellites: The Law and Our National Policy," 44 *American Bar Association Journal* 321 (1958); "International Control of Outer Space—Some Preliminary Problems," *Third Colloquium* 22 (1960). The legal adviser to the State Department, Loftus Becker, posed the figure of 10,000 miles in 1958, Becker, "Major Aspects of the Problem of Outer Space," 380 *Department of State Bulletin* 966 (1958). For views on the law of the air, see Goedhuis, "Questions of Public International Air Law," 81 *Recueil des Cours* 205 (1952), and compare Kucherov, "Soviet Attitude toward International Law and Outer Space," *Soviet Space Programs, supra*, note 10, Chapter I, at 194-203.

⁴¹¹ Chief Justice Marshall stated in 1804 that the state's "power to secure itself from injury may certainly be exercised beyond the limits of its territory." *Church v. Hubbard*, 2 Cranch 187.

analogies, namely, that there should be sovereign control over the airspace similar to the right of a state to exercise sovereign control over territorial waters and that just as the high seas are free of exclusive sovereign control, so also the area to be known as outer space should be free of exclusive sovereign control. The force of this analysis led, without dissent, to the adoption of the General Assembly's Resolution 1721 A 1.(b) (XVI), which promulgated the previously established customary law that "Outer space and celestial bodies are free for exploration and use by all States in conformity with international law and are not subject to national appropriation."⁴¹² Thus, it may be positively stated that outer space and celestial bodies, like the high seas, may not be made the subject of any state's exclusive sovereignty. This, of course, does not limit the right of a state to enjoy international peace and security, nor does it inhibit a state's legitimate right of self-defense. Neither does it resolve the problem of determining where airspace ends and outer space begins, nor establish precise activities in which a state may engage while pursuing the peaceful purposes impressed upon it by the current law. However, it is absolutely clear that a state, and others, may engage in the same kind of peaceful activities in outer space as a state, and others, may pursue on the high seas, and for the same purposes. Legitimate defensive activities may be carried on in both environments, since both are man-oriented and must serve his national and community values.

Resolution 1721 (XVI) made no effort to define the realm of outer space and did not carry into this environment the fixed—albeit uncertain—zonal concepts of territorial waters and high seas. The legal situation was accurately depicted by Ambassador Stevenson prior to the adoption of the resolution. He stated in 1961 to the First Committee how fortunate it was that "the value of the principles of freedom of space and celestial bodies does not depend on the drawing of a boundary line. If I may cite the analogy of the high seas, we have been able to confirm the principle of freedom of the seas even in the absence of complete agreement as to where the seas begin."⁴¹³

The importance of establishing a fixed distance above the subjacent state as the upward boundary of exclusive power cannot be overlooked. This point can best be established by means of express agreement in view of the needs of certainty and specificity. It springs directly from the vast peace, security, and defensive—as

⁴¹² Annex 2, *infra*, at pp. 443-446.

⁴¹³ U.N. Doc. A/C.1/PV.1210.

affected by all of the other considerations of the social complex—requirements of the present world. In the event that express agreement cannot be realized, the forces of custom and usage will undoubtedly provide the ultimate bounds of national sovereignty. At the present time, however, custom and usage are unable to provide suitable guidance for precise limits of such a boundary because of the constant change in science and technology. At the time of this writing, the typical minimum perigee of manned spacecraft is 100 miles. The future may well bring a reduction of this altitude, but in any event, in the course of a launch and return to earth—particularly when advanced hybrid craft are employed—it may be anticipated that relatively flat trajectories, at heights of 25 to 60 miles, will extend in lateral distance as far as 7,000 to 10,000 miles.

Under these probable circumstances, the maritime analogy of territorial waters for spacecraft when in airspace (within which the subjacent state exercises full sovereignty) may be employed. The concept of innocent passage through airspace for the forthcoming landing of a spacecraft has been frequently suggested.⁴¹⁴ However, inasmuch as a state may undertake security measures in areas over which it does not exercise sovereignty, formalization and highly specific clarification of space activities may be required. Thus, the concept of contiguous zones may be developed for areas situated above the upward or lateral reach of the exclusive sovereignty of the underlying state and the legal rationale underlying air defense identification zones would appear applicable to these outer reaching areas beyond sovereign control.⁴¹⁵

It does not appear that a subjacent state will be able to exploit outer space in the same manner that a littoral state is able to use the resources of the continental shelf. It is, in fact, difficult to imagine any exploitative parallel between areas in space and those underlying the high seas closely proximate to a surface continental land mass. The Truman Proclamation termed such a shelf to be "an extension of the land-mass of the coastal nation and thus naturally appurtenant to it * * *"⁴¹⁶ Although the United States proclamation

⁴¹⁴ Horsford, "Principles of International Law in Spaceflight," 5 *St. Louis University Law Journal* 73 (1958). Compare articles in the Space Law Colloquia.

⁴¹⁵ MacChesney, *U.S. Naval War College International Law Situation and Documents*, 1956, 579-600 (1957); Martial, "State Control of the Air Space over the Territorial Sea and the Contiguous Zone," 30 *Canadian Bar Review* 245 (March 1952).

⁴¹⁶ *United States Continental Shelf Proclamation*, 10 *Federal Register* 12303; 40 *A.J.I.L. Supp* 45 (1945).

made reference to self-protection, it also declared that "The character as high seas of the waters above the continental shelf and the right to their free and unimpeded navigation are in no way thus affected."⁴¹⁷ This has since been recognized in Article 3 of the 1958 Geneva Convention on the Continental Shelf.⁴¹⁸ Thus, if any comparison affecting outer space is to be made, it must be that the principles of Resolution 1721 A (XVI), requiring that outer space be available for free use and exploration, correspond with the rights possessed on the high seas rather than the primary rights of exploitation of natural resources. Any self-defensive factors implied in the continental shelf doctrine are safeguarded, in outer space, via the concept of sovereignty in airspace and by the doctrine of reasonable self-defense to ensure the basic right of continued national existence.

Very little attention has been called to the possible analogy between an artificial island positioned in the high seas and the permanent or semipermanent space station established in outer space. Texas towers have been placed in high seas areas on the continental shelf in order to facilitate the exploitation of natural resources and for security purposes. Article 2 of the 1958 Geneva Convention on the Continental Shelf specifically takes this into account and authorizes their use for exploitative purposes. The essential natural resources of outer space are observable scientific data. Thus, there would appear to be no objection to the establishment of a permanent or semipermanent space station for the gathering of scientific data. This would fall well within the principle that outer space is to be used for peaceful, i.e., nonaggressive and beneficial, purposes.

Franklin, in discussing the use of the continental shelf for purposes other than the exploitation of natural resources, has suggested that such areas may be justifiably used for reasonable defensive purposes. According to him, Article 5 (1) of the Convention suggests the test of reasonableness for the exercise of inherent defensive rights,⁴¹⁹ namely, that such installations "must not result in any unjustifiable interference with navigation, fishing, or the conservation of the living resources of the sea, nor result in any interference with fundamental oceanographic or other scientific research carried out with the intention of open publication."⁴²⁰ There is no doubt that whomever installs an artificial island or Texas-type tower on

⁴¹⁷ *Ibid.*

⁴¹⁸ U.N. Doc. A/CONF.13/L.55.

⁴¹⁹ Franklin, *U.S. Naval War College International Law Studies*, 1959-1960, 66 (1961).

⁴²⁰ U.N. Doc. A/CONF.13/L.55.

the high seas retains legal title to it, nor that such an installation must not unreasonably interfere with existing sea lanes. Many proposals have been made that title to space devices remains in the launching or operating party, and that the latter should have the right to repossession of the craft, its parts, and the return of personnel. In this context it may be suggested that a mobile space platform may be compared to an artificial island. This conclusion is buttressed by the basic principle that outer space may be freely used and exploited, subject to the right of each satellite to use the orbit into which it has been placed. Such craft, so long as it is used for peaceful, i.e., nonaggressive and beneficial, purposes, may claim exclusive use of its orbital pattern with the corollary right that there should be no unreasonable interference with the first occupier's use. To provide for maximum benefits there is an urgent need for a system of prelaunch registration and inspection procedures and regulated landing processes. The absence of such procedures, however, need not detract from the validity of this analogy, nor does the analogy detract from application to outer space of the basic high seas analogy. In the words of Mr. Justice Story:

Upon the ocean, then, in time of peace, all possess an entire equality. It is the common highway of all, appropriated to the use of all; and no one can vindicate to himself a superior prerogative there. Every ship sails there with the unquestionable right of pursuing her own lawful business without interruption; but whatever may be that business, she is bound to pursue it in such a manner as not to violate the rights of others.⁴²¹

The acceptance of this fundamental principle, although it provides no detailed help as to the boundary between sovereign airspace and the free outer space of Resolution 1721 (XVI), can contribute materially to the evolution of the law of outer space.

It may be concluded that outer space has drawn heavily on the legal concept of freedom of the seas and will continue to do so. At the present time the concept of territorial waters has only a minimal relation to sovereignty in airspace, and aside from the need of the corollary of freedom of innocent passage for spacecraft in airspace, it is very speculative as to whether this doctrine can be accommodated to the needs of outer space. Assuming that there will be a precise agreement establishing the upper limits of sovereignty in airspace, it is entirely foreseeable that outer space will receive with favor the analogy of contiguous zones extending spaceward to

⁴²¹ *The Marianna Flora*, 11 Wheat 1 (1826).

appropriate distances from the joint airspace-outer space boundary.⁴²² Additionally, since both the continental shelf and artificial islands concepts are based on the right to engage in the reasonable use of known resources, they have assisted in establishing the principle that outer space may be reasonably used or exploited, including the right to obtain from it scientific and technical data beneficial to mankind.

b. *Airspace*

As with the high seas and related maritime areas, there has been much serious analysis to determine whether the legal principles and rules applicable to airspace have any reasonable bearing on outer space. Although, as previously noted, the doctrine of sovereign control over airspace has not been accepted for outer space,⁴²³ it is universally accepted that each state has complete and exclusive sovereignty over airspace above its territory and territorial waters.⁴²⁴

The law of territorial waters, and, to a much lesser extent, the law of airspace, place emphasis upon practical needs for innocent passage. Innocent passage requires conduct which is not prejudicial to the peace, good order, or security of the coastal or subjacent state. Thus, while a state may arbitrarily exclude anyone from its airspace, it must accept limitations upon full sovereignty over territorial waters. Passage in territorial waters is subject to national laws and regulations, but the latter in turn are subject to appropriate international agreements and other rules of international law. The same may become true respecting the use of a state's airspace.

In view of the fact, heretofore stressed, that future landing procedures for spacecraft will involve long flights at relatively low altitudes above the subjacent territorial areas—perhaps, even including extended passage through national airspace—it now appears likely that the law of outer space will necessarily be required to take account of, and probably adopt a substantial portion of, the analogy of innocent passage through territorial waters. It follows then, that if the function of the spacecraft is such that it may claim the right of innocent passage through sovereign airspace in the course of making a landing, it would appear that its function while in outer space must not be dissimilar, and vice versa. However, for this claim to have validity, it may well be that a requirement as to con-

⁴²² Seara-Vazquez, "The Functional Regulation of the Extra-Atmospheric Space," *Second Colloquium* 143-144 (1960).

⁴²³ *Supra*, pp. 242-248.

⁴²⁴ Convention on International Civil Aviation, Chicago, 1944, Article I; and Convention on the Territorial Sea and the Contiguous Zone, Article II.

sistency of conduct, e.g., a guarantee of peaceful use, on the part of the spacecraft, or similar consistent conduct by its owner, will be required as a condition precedent to the enjoyment of the privilege of innocent passage in airspace. This, of course, creates no problem when accepting the basic principle that spacecraft must be used for peaceful, i.e., nonaggressive or beneficial, purposes. The acceptance of this innocent passage analogy, in the context of peaceful purposes, serves to place great emphasis on the need to achieve specificity as to the content of the spectrum of peaceful purposes.

Although the analogy of sovereign control over airspace has been rejected for the regime of outer space, the broad sea and the limited airspace analogy of innocent passage has a direct bearing on space conduct and space law and has already found its way into the law in the form of United Nation Resolution 1721 (XVI).⁴²⁵ There is, however, an urgent need to specify, through an express international agreement, the rights and duties of spacecraft during the course of such innocent passage while engaged in landing procedures. Certainly suitable registrations, inspections, and notifications of proposed launches, prior to launching, may assist in determining whether a spacecraft returning from outer space and passing through airspace will be entitled to claim a right of innocent passage.

c. Land

Since, as has been asserted, outer space and celestial bodies are oriented to serve man's needs, it is not surprising that proprietary rights relating to the ownership and possession of land have a direct bearing on man's new space dimension. Resolution 1721 A1.(b)(XVI) promulgated the principle that "Outer space and celestial bodies are free for exploration and use by all States in conformity with international law and are not subject to national appropriation." The intent behind this principle was to avoid national claims of sovereignty, including exclusive use over claimed areas, for all or parts of outer space and for celestial bodies. However, as previously suggested,⁴²⁶ this does not appear to prohibit the creation of a valid claim for possessory rights respecting the occupancy of a given orbital pattern, although the extent of such rights will necessarily become the subject of a convention providing for monetary damages for destruction or interference. Furthermore, the right, if any, to reoccupy such an orbital pattern following removal or destruction of the space vehicle through whose activity or presence the initial claim was made must also be determined.

⁴²⁵ Annex 2, *infra*, at pp. 443-446.

⁴²⁶ *Supra*, pp. 252-253.

McDougal has examined the possibility that exclusive claims may be made relating to minerals located on celestial bodies, while at the same time supposing that spatial-extension resources such as the void of space, the surfaces of celestial bodies and contiguous space surrounding celestial bodies "will be maintained as sharable resources, open to free access by all."⁴²⁷ He has seen the value of the doctrine of occupation respecting the possible future development of a rule of law applicable to celestial bodies pertaining to the possible exclusive acquisition by individuals and others of fixed, and limited, surface areas. McDougal implies that the use of a land analogy depends upon the following contingency: "In the eventuality, however, that the general community should come to tolerate the exclusive acquisition of the surfaces of the celestial bodies, it would still appear in the common interest that the community should impose the most stringent requirements of effective occupation for the establishment of such exclusive acquisition."⁴²⁸ If this eventuality were to come to pass, certain analogies relating to the manner of staking out claims, registration, and the provision of notice might be borrowed from earthly practices.

While previewing without forecasting, the possibility of establishing claims to resources—but not to celestial bodies, *per se*—McDougal has emphasized the common interests to be served by holding the great bulk of space resources "open for inclusive enjoyment by all, and not made subject to exclusive acquisition."⁴²⁹

It is generally agreed today, and certainly this is the position of the major resource states, that sovereignty is not applicable to outer space and celestial bodies. This has been explicitly stated by the Soviet Premier, Mr. Khrushchev, in asserting that the depositing of Soviet pennants on the moon has given rise to no special claims on that planet. With the clear prospect of manned lunar flights and the probable manned exploration of the surfaces of celestial bodies, it may well be that in the future there will arise legal claims—not for celestial bodies in their entirety—for specific surface segments or areas which have been brought under the type of domination and control envisioned by McDougal. Should this come about, it would appear that there would not be any serious objection to the estab-

⁴²⁷ McDougal, Lasswell, Vlasic and Smith, "The Enjoyment and Acquisition of Resources in Outer Space," 111 *University of Pennsylvania Law Review* 634 (1963).

⁴²⁸ *Ibid.*, 635. Compare, R. Y. Jennings, *The Acquisition of Territory in International Law* 36–52 (1963).

⁴²⁹ *Ibid.*, 636. See pp. 551–552 for a distinction between three types of resources: Spatial Extension, Flow, and Stock.

lishment of proprietary rights over segments or parcels following the property law analogies of the earth. It should be noted, however, that such activity as man may be able to devise and implement on celestial surfaces must conform to the overriding principles heretofore acknowledged, namely, use and exploration for peaceful purposes. The establishment of earth rules for property, tort, criminal law, and other similar types of situations would best be evidenced by express international agreements.

d. *Antarctica*

The successful negotiation, signature, and ratification of the Antarctic Treaty of December 1, 1959, providing continually for its use for exclusively peaceful purposes has given encouragement to those who seek to minimize international tension and discord and to maximize legal processes. Thus, Article I of the Treaty provided:

1. Antarctica shall be used for *peaceful purposes only*. There shall be prohibited, *inter alia*, any measure of a military nature, such as the establishment of military bases and fortifications, the carrying out of military maneuvers, as well as the testing of any type of weapons.

2. The present treaty shall not prevent the use of military personnel or equipment for scientific research or for any other peaceful purposes.⁴³⁰

A strong parallelism as to substance, if not as to form, exists respecting permitted uses of Antarctica and outer space.

Prior to the suspension of the need to make national claims and self-serving statements reserving the right to make claims of sovereignty by reason of the provisions contained in Article IV of the Antarctic Treaty, the Legal Adviser of the Department of State had pointed to the existence of an analogy between the Antarctic and outer space. It was his view, in 1958, that at no time had the United States "conceded that we have no rights in the higher regions of space."⁴³¹ It was also his view that there was no need to make a claim respecting outer space until after man had demonstrated a capability to exist outside the atmosphere, and that even after this had been ascertained there would be no cause to make an early claim to protect national rights. He stated:

A very apt analogy is afforded by the Antarctic. There, for many, many years, the United States has been engaged in activ-

⁴³⁰ 41 *Department of State Bulletin* 912 (1959); 54 *A.J.I.L.* 476 (1960). (Italics added.)

⁴³¹ "Major Aspects of the Problem of Outer Space," 38 *Department of State Bulletin* 966 (1958).

ties which under established principles of international law, without any question whatsoever, created rights upon which the United States would be justified in asserting territorial claims, that is to say, claims of sovereignty over one or more areas of the Antarctic. Notwithstanding this fact the United States has not asserted any claim of sovereignty over this portion of Antarctica, although the United States has, at the same time, made it plain that it did not recognize any such claims made by other states.⁴³²

It was his view that the United States had expressly reserved rights and that its nonclaim status had not derogated from the rights flowing from its numerous activities in the area.

The validity of the Becker analogy between Antarctica and outer space has been analyzed by Lissitzyn who has referred to it—in the context of sovereignty only—as “not altogether convincing.”⁴³³ The Lissitzyn assessment was published prior to the 1959 Twelve Power agreement on Antarctica, and it was his conclusion that both for practical and legal reasons it was “unlikely that the legal status of outer space will in the future resemble that of Antarctica.”⁴³⁴

After these views were expressed, the asserted analogy between outer space and the Antarctic respecting sovereignty has been entirely dissipated. The December 20, 1961, General Assembly Resolution 1721 (XVI) specifically negated the concept of sovereignty in outer space. In commenting on the meaning of this resolution to the Committee on the Peaceful Uses of Outer Space, the American representative, Ambassador Plimpton, stated on May 4, 1962, “We have rejected the concept of national sovereignty in outer space. No moon, no planet, shall ever fly a single nation’s flag. These principles are sound principles, and I take this opportunity to re-endorse them heartily on behalf of the United States Government.”⁴³⁵

⁴³² *Ibid.* His reference to the effective role of national “activities” in Antarctica parallels the position taken herein that the active use of outer space for peaceful purposes has helped to establish a pattern of customary international law.

⁴³³ Lissitzyn, “The American Position on Outer Space and Antarctica,” 53 *A.J.I.L.* 131 (1959).

⁴³⁴ *Ibid.* Compare, Kucherov, “Legal Problems of Outer Space,” *Second Colloquium* 69 (1960).

⁴³⁵ U.N. Doc. A/AC.105/PV.2, 13–15. Compare, Feldman, “The Report of the United Nations Legal Committee on the Peaceful Uses of Outer Space: A Provisional Appraisal,” *Second Colloquium* 21 (1960).

In another context, that of managing international relations in areas where sovereignty either does not exist (outer space) and in areas where if it does exist is now held in suspension (Antarctica), certain analogies or parallelisms exist. The problem of control is generic to both areas, and it is entirely possible that processes and principles acceptable in one area would be beneficial to mankind in the other area.⁴³⁶ As has already been pointed out, the two major resource nations have discussed in the context of disarmament in outer space the provision, found in Article I of the Antarctic Treaty, prescribing the testing of any type of weapons.⁴³⁷

Several writers have noted the analogous relationship between outer space and Antarctic problems. The most detailed approach to common problems has been made by Faria who has developed a draft covenant for outer space following much of the language contained in the Antarctic Treaty. Thus, paragraphs 1 and 2 of his first article accept the concepts of Article I of the Antarctica Treaty, and provide:

1. The outer space, the Moon, and all uninhabited space bodies shall be used for peaceful purposes only. There shall be prohibited, *inter alia*, any measures of a military nature, such as the establishment of military bases and fortifications, the carrying out of military maneuvers, as well as the testing of any type of weapons.

2. The present treaty shall not prevent the use of military personnel or equipment for scientific research or for any other peaceful purpose.⁴³⁸

His proposals admit the need of a space regulatory agency, acknowledge the need for space rules, and make provision for penalties in the event of infraction. Like the drafts presented at the United Nations and those of private groups, the Faria proposals seek a structured regime of law, including controls, for outer space.

e. International Rivers and River Basins

The discussions concerning the legal rights over international rivers and river basins have, in a very real sense, demonstrated opposing viewpoints which exist with respect to rights in space.

⁴³⁶ Jessup and Taubenfeld, *Controls for Outer Space and the Antarctic Analogy* 137-282 (1959).

⁴³⁷ *Supra*, pp. 257-258.

⁴³⁸ Faria, "Draft to an International Covenant for Outer Space—The Treaty of Antarctica as a Prototype," *Third Colloquium* 125 (1961).

In 1958 the Department of State made public a Memorandum entitled *The Use of Systems of International Waters*.⁴³⁹ This document placed emphasis upon the fact that general customary international law contains principles, rules, concepts, and standards equal to the task of effecting an equitable distribution of the resources of international rivers and river basins.⁴⁴⁰

Another point of view on international river and river basin rights has been put forward by Berber, who has urged that the only way to establish a regime of law for such areas is through the express process of treaty making.⁴⁴¹ It is true so far as the law of outer space is concerned that a few nations have asserted it can be the product only of express agreement. This view, however, has been almost universally rejected by nations not making the assertion, and as has been heretofore expressed, existing principles of space law have been the product of practice and usage. These have now ripened into a customary international law of space. Hence, it is not possible to assert that there exists—even assuming, but certainly not admitting the validity of the Berber premise—a valid analogy between the processes of the law of outer space and the assumed exclusively formal processes of rivers and river basins.

There is abundant reason to believe that customary international law establishing rights and duties respecting international rivers and river basin resources now exists. If this be true, then the question arises as to the content of such law which may have some application, by way of analogy, to the peaceful use and exploration of outer space.

General principles of law apply to the use of waters of international drainage basins. Thus, Lauterpacht has stated:

The responsibility of a State may become involved as the result of an abuse of a right enjoyed by virtue of International Law. This occurs when a State avails itself of its right in an arbitrary manner in such a way as to inflict upon another State an injury which cannot be justified by a legitimate consideration of its own advantage. * * * The duty of the State

⁴³⁹ *Legal Aspects of the Use of Systems of International Waters with Reference to Columbia-Kootenay River System under Customary International Law and the Treaty of 1909* (1958). Compare, Griffin, "The Use of Waters of International Drainage Basins under Customary International Law," 53 A.J.I.L. 50 (1959). Griffin is the author of the departmental memorandum.

⁴⁴⁰ Goldie, "Special Regimes and Pre-emptive Activities in International Law," 11 *Int'l & Comp. L.Q.* 683 (1962).

⁴⁴¹ Berber, *Rivers in International Law* 156-159, 259-266 (1959).

not to interfere with the flow of a river to the detriment of other riparian States has its source in the same principle.⁴⁴² Griffin has noted that the domestic law of a number of important states, including the United States, contains principles prohibiting the diversion of a stream in a manner strongly prejudicing those who might otherwise benefit from such a stream. He has also noted the existence of international judicial decisions denying to states the use of territorial sovereignty in such a manner as to cause injury to another state, and he has concluded that these principles are applicable to the use of water resources in such streams.⁴⁴³

These are general principles and have no unique applicability to water resources. Their application to the peaceful uses of outer space follows as a matter of course. Further, the acceptability of general customary international law in the field of water uses and resources gives additional support to its meritorious application to the use and exploration of outer space.

f. Analogies in Summation

In summary, it may be said that the application of the analogy of freedom of the high seas has been useful and valuable although neither the law of the sea nor the law of outer space, by way of analogy or otherwise, have been able to offer final assurance as to where their boundaries begin. In view of the expected low trajectories to be employed by space vehicles while returning to earth, a critical legal problem of "Innocent passage" for space vehicles remains to be resolved. It is to be hoped that the pertinent analogies to be drawn from both sea law and air law, as well as general principles of law no matter where found, will provide practical answers to this situation. General principles, no less than analogies, will have to serve the ongoing needs of the space age, for as Mr. Justice Frankfurter has pointed out with regard to the employment of analogies in the development of air law as it may pertain to the established laws of land or sea, "One of the most treacherous tendencies in legal reasoning is the transfer of generalizations developed for one set of situations to seemingly analogous, yet essentially very different, situations."⁴⁴⁴

Despite this caution it should also be remembered that with the advent of the space age, new and important problems are demanding prompt answers. The instances of the behavior of states and their nationals is increasing in volume and variety. This conduct has

⁴⁴² I Oppenheim-Lauterpacht, *International Law* 345-347 (8th ed., 1955).

⁴⁴³ Griffin, *op. cit.*, 58-59.

⁴⁴⁴ *Braniff Airways v. Nebraska Board*, 347 U.S. 590 (1954).

taken place to a very important degree in the world forum. The reasonable control over the uses of outer space, which is afforded by international law, should not be unduly arrested by a false inability to ascertain the existence of analogous conditions. More affirmatively the development of an adequate space law, through the rational processes of analogy, serves many national and community values.

CHAPTER IV

REASONABLE USES OF OUTER SPACE

A. THE NATURE OF REASONABLE USE

Mankind is intent upon exploring and using outer space and celestial bodies. He is, however, still endeavoring to arrive at decisions as to how such areas may be used. From the legal point of view the problem presented is this: Under what conditions may a great variety of uses and exploratory activities be carried on? Further, what, if any, uses or activities may not be engaged in at any time? Finally, what, if any, uses or activities generally permitted may be occasionally prohibited, and, conversely, what, if any, uses generally prohibited may be occasionally permitted? When the problem is posed in this fashion, it becomes immediately clear that the ultimate test of the use and exploration of outer space becomes one of reasonableness, and, more particularly, reasonableness in the specific factual context of a given situation. The principle of reasonable uses implies the importance of control for such uses.

Patterns of reasonableness have already been developing in the international law of outer space. The forces which have contributed to a verbal consensus respecting some uses and activities, like the forces which have contributed to the development of a limited customary international law of outer space, have been based upon practical considerations. This attitude toward reasonable, and therefore legal, conduct has stemmed from the same social complex, including the forces of practice and usage, which has provided man with a customary international law of outer space. Further, the particular consensus achieved in the United Nations concerning the substance of draft proposals is indicative of standards of reasonable conduct in the space age. Illustrative of this point are the several drafts relating to liability for damages caused by space devices, rights available to personnel and space vehicles in the event of an emergency landing, and common basic principles contained in the several draft declarations and international agreements dealt with in Chapter III.¹

¹ *Supra*, pp. 211-228.

Reasonableness of use of outer space and celestial bodies at this time depends on four major legal factors. The first is the existing customary international law of outer space.² The second is the unanimous General Assembly Resolutions 1721 (XVI) of December 20, 1961, 1802 (XVII) of December 19, 1962, and 1962 (XVIII) of December 24, 1963. All have incorporated and promulgated customary international legal principles. The third is the unanimous General Assembly Resolution 1884 (XVIII) of October 17, 1963, which endeavored to forestall the positioning of weapons of mass destruction in outer space.³ The fourth is the 1963 Moscow Treaty banning nuclear weapons testing.⁴ These factors are significantly influenced by wide-ranging international legal discussions and the writings of legal specialists.⁵ Furthermore, they have, in an analytical sense, made provision for the free use of outer space for peaceful, i.e., nonaggressive and beneficial, purposes. By direct provision and by implication they place limitations upon the free use of outer space for nonconforming uses. In this manner some limits are placed on national uses of this environment.

However, when the concept of national control enters the picture it brings with it both affirmative and negative aspects. Thus, free-

² *Supra*, p. 44.

³ This Resolution provided: "The General Assembly, Recalling its Resolution 1721 A (XVI) of 20 December 1961, in which it expressed the belief that the exploration and use of outer space should be only for the betterment of mankind,

"Determined to take steps to prevent the spread of the arms race to outer space,

"1. Welcomes the expressions by the Union of Soviet Socialist Republics and the United States of America of their intention not to station in outer space any objects carrying nuclear weapons or other kinds of weapons of mass destruction;

"2. Solemnly calls upon all States:

"(a) To refrain from placing in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, installing such weapons on celestial bodies, or stationing such weapons in outer space in any other manner;

"(b) To refrain from causing, encouraging or in any way participating in the conduct of the foregoing activities." *U.N. Doc. A/5571; A/RES/1884 (XVIII); U.N. Doc. A/C.1/L.324.*

Background data is contained in "Report of Conference of Eighteen-Nation Committee on Disarmament," *United Nations Review* 42-43 (October 1963). The United States position was indicated by Ambassador Stevenson on October 16, 1963. See "U.N. Calls on States to Refrain from Orbiting Weapons," 49 *Department of State Bulletin* 753 (November 1963).

⁴ 40 *Department of State Bulletin* 239 (1963). *Infra*, p. 301.

⁵ Compare the writings of Cooper, Gardner, Haley, J. A. Johnson, Lasswell, Lipson, McDougal, Vlasic in Authors' Index.

dom of outer space for peaceful uses means freedom from unilateral control so long as the users conduct their activities in a reasonable manner. Put in other words, the right of free use depends upon reasonableness of that use and imposes a duty upon users not to engage in unreasonable activities. Further, the right of free and reasonable use relieves a state from the duty of not interfering in uses by others when the specific uses by others become so unreasonable—as in the case of the intentional use of outer space or celestial bodies for aggressive military purposes—as to occasion valid concern for international peace, international security, and the requirements of legitimate self-defense.⁶

We see then, that in the context of reasonableness—including both freedom to use and freedom from uses—control assumes an importance of substantial proportion. Mankind's interest in the fullest exploitation of the space dimension must not fail to take into account the proper expectation that he will not be made the subject of unreasonable harms emanating from the heavens. This situation has been interpreted by Johnson in the following language:

The area within which the underlying State possesses the right to 'veto' the activity of another State must not be permitted to extend to altitudes which would hamper the freedom of space exploration. It is of little value to speak of the freedom of outer space if man cannot travel freely to that realm and freely back to earth.⁷

In seeking to restrict outer space for reasonable uses, international law may proceed along several paths. None has received final and authoritative approval, and the problems which face the developing law of outer space are those which have long confronted the whole gamut of the law. These separate approaches can best be stated in the form of interrogations. First, is all human activity in outer space permissible pending the imposition of legal restrictions—from whatever source derived? This assumes that any conduct is permissible until valid prohibitions exist and have been generally acknowledged as binding. Or, is no human activity in outer space permissible unless and until sound legal sources provide adequate guidance as to its permissibility? In the first situation an answer—but not necessarily the correct answer—has been that international law's entire coverage extended into outer space even before the

⁶ Whether the reaction to unreasonable uses may be collective or individual is not being considered at this point.

⁷ Johnson, "The Future of Manned Space Flight, and the 'Freedom' of Outer Space," *NASA News Release*, August 4, 1962, pp. 14-15.

launching of the first orbiting satellite and that the general law existing at that time was not violated by that experience. Another answer is that because of the uniqueness of the environment, only some of the existing legal principles could have application in outer space. In the second situation an answer—and again not necessarily the correct answer—has been that man's actual conduct precedes law, whether customary or express. These questions raise false issues by their inclusiveness, e.g., "all" or "no" human activity. Still, the basic issue, as presented to the World Court in the *Lotus Case*, requires analysis so that doubt concerning legal rights in outer space may be put aside.⁸

It will be recalled that in the *Lotus Case*, it was argued by France that under international law, France should exercise exclusive jurisdiction over its national because past practices pointed to a valid rule having this legal effect. The government of France also urged that Turkey might exercise jurisdiction only if it were able to point to a then existing and applicable rule of international law permitting a trial in Turkey. The Court held, in effect, that international law was not all encompassing—that there was no existing or applicable rule restricting or denying the exercise of jurisdiction by Turkey. It was concluded that the conduct of Turkey was not violative of international law in the absence of a rule prohibiting Turkey's exercise of jurisdiction, and, finally, that the exercise of jurisdiction by Turkey was appropriate.

However, the holding in the *Lotus Case* that international law is not all-inclusive and that it has prohibited only that which in fact is so expressed must be applied reasonably and in context to the free and peaceful use of outer space. It must be kept in mind that customary international law is but one part of international law and that its utility generally is to give legal approval to reasonable and measurable past practices of an affirmative type. Thus, its value lies largely in giving approval to existing practices which protect property and commercial values. Yet, at the same time, custom has its other face. By not approving aggressive conduct, it tends to inhibit or negate the legality of such behavior. Although customary international law has lacked the resources to deny, in an express and affirmative manner, the use of outer space for aggressive

⁸ The S.S. *Lotus* (*France v. Turkey*), P.C.I.J., Ser. A, No. 10; 2 Hudson, *World Court Reports* 20 (1935). This case held that a state's wide measure of discretion is subject to existing legal prohibitions and that only where such prohibitions were lacking might "every state remain free to adopt the principles which it regards as best and most suitable."

and nonbeneficial purposes, one may not conclude that such aggressive and nonbeneficial uses are therefore either reasonable or permissible. One must look to the substantive content of international law as contained in its broad principles and rules to support the conclusion that aggressive international conduct is unlawful in all environments.⁹ This view is clearly valid and is upheld by both general international law and by such express international agreements as the Charter of the United Nations and by the Kellogg-Briand Pact of 1928.

The *Lotus Case* does not constitute a precedent in favor of unrestricted national uses and activities in outer space. It is by now much too late to doubt the availability and the applicability of known international legal principles to the use and exploration of outer space and celestial bodies. This was generally regarded to be true prior to the adoption of Resolution 1721 (XVI). The Resolution, in relying on general international law and on the Charter of the United Nations, makes this fact explicit. However, since international law does not consist of a detailed and all-encompassing set of prohibitions, admittedly where this form of law has not yet developed, a state may engage in such specific activities as do not fall within prohibitory principles and rules. As to such specific forms of national conduct, a state may engage in reasonable conduct until inhibited by clearly established principles and rules of international law.

In view of the foregoing, and as related to specific types of space conduct, it is possible to assert in the course of the development of a satisfactory law of outer space that reasonable space activities may be regarded as permissible until prohibited. This is true where such activities are peaceful, e.g., nonaggressive and beneficial. The other presumption, suggested by some, is that in the absence of a detailed and encompassing set of legal prohibitions, all forms of space activity are permissible unless and until the sources of international law indicate the invalidity of such conduct.

This apparent conflict in method of approach, and consequent divergence in the governance of space activities, has, in fact, already been resolved. The key is the developing pattern of reasonableness as to space uses and activities. Thus, if it is contended that free and peaceful uses of outer space are illegal until specifically permitted, it can be stated that the principle of permissibility for peaceful uses has been determined by general customary international law and Resolution 1721 (XVI). On the other hand, if it is

⁹ *Eastern Extension, etc. Telegraph Co. Ltd.*, Nielsen's Report 75 (1910).

argued that space activity is permissible until prohibited by a specific and express rule of international law, reference may be had to the 1963 Moscow Nuclear Test Ban Treaty and to the General Assembly Resolution 1884 (XVIII). It may also be noted that this view has never been carried to the point where it is assumed that conduct of any and all kinds—in particular, intentionally aggressive activity—was thought to have the approval of international law. In fact, outer space is not a legal vacuum, and general principles of law as a part of international law have been recognized in General Assembly Resolution 1721 (XVI) as applying to conduct in outer space and on celestial bodies.

The contest between permissible and nonpermissible conduct must be resolved in a structured space law regime by the concept of reasonableness. No brief need be filed on behalf of the merits of the concept of reasonableness, except to say that such a doctrine is based upon reciprocal benefits and on a generalized ongoing mutuality of interest. Reasonableness emphasizes the essential values of a world community of interests, and when conditioned by acceptable international tolerances provides the basis for effective and cooperative international relations. One of the greatest virtues of the concept of reasonableness is that it does not seek to provide ultimate answers in advance of constantly modifying problems. In the context of the space age, the value of the concept of reasonableness will be measured against its record of service to the dynamic and continuing needs and aspirations of mankind.

B. INSTANCES OF REASONABLE USE

In view of the fact that space capabilities are properly regarded as elements of national strength and prestige, and in view of the constant competition among and between nations for leadership, power, prestige, and security, it should not be surprising that there is not a complete consensus among nations as to the reasonableness of all uses of space devices. Or, perhaps it is not surprising that there has been quite general agreement that many space uses may be regarded as reasonable. But, this is always subject to the reservation that under certain circumstances uses which might generally be regarded as reasonable may become unreasonable. This is true because the complex qualities of space devices are such as to enable them to be used in many instances for quite varied purposes. The United States has frequently insisted that this fact must be taken into account in the development of space law. Thus, Senator Gore told the First Committee of the United Nations in December 1962,

"There is, in any event no workable dividing-line between military and nonmilitary uses of space. For instance, both American and Russian astronauts are members of the armed forces of their respective countries; but this is no reason to challenge their activities or to deprecate their accomplishments. A navigation satellite in outer space can guide a submarine as well as a merchant ship. The instruments which guide a space vehicle on a scientific mission can also guide a space vehicle on a military mission."¹⁰

The state exists for a variety of purposes. Among them it seeks to protect its citizens and its ongoing existence, and in order to do so it utilizes the most modern scientific and technological equipment known to man. The manner in which such devices are employed depends upon man's intent, expectations, and the surrounding factual circumstances. Thus, such devices may be used for peaceful purposes. Yet in many situations they may also have utility for the carrying on of war. Nonmilitary uses, it may be assumed, are peaceful ones. On the other hand, it does not follow that military uses need be non-peaceful ones, for the function of a military use may be to provide information or data in such a way as to deter or prevent the outbreak of war. Peaceful, and hence reasonable uses of outer space, may include military uses when the latter are nonaggressive and beneficial in their purpose. Therefore, it may be concluded that the reasonableness of space activity is determined not so much by the possible military uses or capabilities of space devices, but, rather, by the non-existence of aggressive intent or by the absence of unpeaceful circumstances. Peaceful uses may be converted into unreasonable uses by means of aggressive military employment.¹¹

¹⁰ U.N. Doc. A/C.1/PV.1289, 13.

¹¹ Feldman has traced the early meaning assigned to the term "peaceful," and has concluded that in United States municipal law and in international law it means "nonaggressive" rather than "nonmilitary." Feldman, "The Report of the United Nations Legal Committee on the Peaceful Uses of Outer Space: A Provisional Appraisal," *Second Colloquium* 23-24 (1960). In his view the foregoing meaning "also appears to be the most reasonable interpretation." *Ibid.* The problem of defining aggression has been noted by Stone, *Aggression and World Order* 201-217 (1958) and by the International Law Commission. Compare Sohn, "The Definition of Aggression," 45 *Virginia Law Review* 697 (1959). Writers on international law have generally regarded peaceful uses to consist of nonaggressive uses. Thus, Meyer has stated that "In my opinion the term 'peaceful' must be understood in the sense of 'nonaggressive.'" Meyer, "Legal Problems of Outer Space," 28 *The Journal of Air Law and Commerce* 341 (1962). He has also stated "To interpret the term 'peaceful' in the sense of 'nonmilitary' would lead to the consequence that no military action could

The primary test of aggressive purpose is intent.¹² However, the context in which the intent is formulated also materially affects the concept of peacefulness and reasonableness of purpose.¹³

Recent discussions at the United Nations have endeavored to make it clear that "peaceful" means "nonaggressive." Thus, the Belgian representative told the legal subcommittee of the Committee on the Peaceful Uses of Outer Space that "the term 'peaceful' in the Committee's title was the antonym of 'aggressive' and not of 'military.'" ¹⁴ The Japanese representative has also contrasted peaceful with aggressive. He told the subcommittee in April 1963, that "The basic theme of the law of outer space must be that outer space should be used for peaceful purposes only and that its use for aggressive purposes such as nuclear testing or the placing of weapons of mass destruction in orbit should be prohibited."¹⁵

The Italian delegate told the subcommittee at the same time that "the most urgent issue was the banning of all activities of an aggres-

be 'peaceful.' But such an interpretation would be in contradiction to all practice." *Ibid.*

Compare also Kittrie, "'Aggressive' Uses of Space Vehicles—the Remedies in International Law," *Fourth Colloquium* 198–219 (1961); Wright, "Legal Aspects of the U-2 Incident," 54 *A.J.I.L.* 846–847 (1960); Beresford, "Surveillance Aircraft and Satellites: A Problem of International Law," 27 *The Journal of Air Law and Commerce* 108–109 (1960); Welsh, "Peaceful Purposes: Some Realistic Definitions," 1961 *Air Force and Space Digest* 73 (November 1961).

Crane has noted the manner in which the Soviets have employed "aggression" in space discussions. He has said "The fourth element of peaceful co-existence emphasized by the Soviet representative to the U.N. Space Committee is the principle of nonaggression. The term 'aggression' is used by the Soviets to stigmatize any military, political, or economic action or alleged preparation for such action which is adverse to Soviet strategic interests." Crane, "Basic Principles in U.S. Space Policy," 22 *Federal Bar Journal* 175 (1962).

¹² Halle, in Goldsen, ed., *International Political Implications of Activities in Outer Space* 88 (1960).

¹³ Illustrations have been given by Halle and Schelling. The former has indicated that the emplacement of a satellite above a country might be regarded as peaceful, but that the positioning of a satellite containing a weapon of mass destruction above a state "is such a threatening gesture that it is intolerable." Schelling has noted that "One might try to make an arbitrary distinction between military related activities and nonmilitary related activities in such things as communication, which is obviously borderline." *Ibid.*, 89.

McDougal, Lasswell and Vlasic, *Law and Public Order in Space* 304–306 (1963), have noted that reasonableness must take into account the factor of claims to occasional exclusive competence to use an environment which normally would be open to the peaceful use of all.

¹⁴ U.N. Doc. A/AC.105/C.2/SR.19, 4.

¹⁵ U.N. Doc. A/AC.105/C.2/SR.22, 10–11.

sive nature in outer space.”¹⁶ During the same period, Mr. Meeker, United States Department of State representative on the subcommittee, stated “For several years the United States has consistently adhered to the view that outer space should be used for peaceful—that is, nonaggressive and beneficial—purposes. However, pending the achievement of disarmament agreements, the test of any space activity *cannot* be whether it is military or nonmilitary, but whether it is consistent with the United Nations Charter and other obligations of international law.”¹⁷

Not all of the representatives on the subcommittee agreed. The Czech delegate told the group in April 1963, that his country wished to prohibit the use of outer space for espionage and for the dissemination of war propaganda, but that he had “some doubts regarding the need for a provision prohibiting the use of outer space for war purposes. While it sympathized with the objective, it believed that the question was outside the Sub-Committee’s terms of reference. Moreover, the provisions of Article 2 (4) of the Charter and of operative paragraph 1 (a) of General Assembly Resolution 1721 (XVI) appeared to cover the question that was involved.”¹⁸ Thus, the Czech delegate, it would appear, was more concerned that outer space should not be used for warlike purposes, for “espionage” as he understood it, or for war propaganda than for its not being used for aggressive purposes.

The general tenor of legal opinion at the United Nations has been to consider that outer space, celestial bodies, and devices positioned there should not be used for aggressive purposes, and that nonaggressive military purposes were within the range of peaceful purposes. At present, nuclear weapons tests in the atmosphere, in outer space, and underwater, and the storing of weapons of mass destruction in

¹⁶ U.N. Doc. A/AC.105/C.2/SR. 20, 4.

¹⁷ Meeker, “Observation in Space,” *Department of State Press Release*, No. 191 (Revised), April 12, 1963, p. 6. Senator Gore in December 1962, had stated at the First Committee: “It is the view of the United States that outer space should be used only for peaceful—that is, nonaggressive and beneficial—purposes. The question of military activities in space cannot be divorced from the question of military activities on earth. To banish these activities in both environments we must continue our efforts for general and complete disarmament with adequate safeguards. Until this is achieved, the test of any space activity must be not whether it is military or nonmilitary, but whether or not it is consistent with the United Nations Charter and other obligations of international law.” U.N. Doc. A/C.1/PV.1289, 13.

¹⁸ U.N. Doc. A/AC.105/C.2/SR.20, 9. However, the Hungarian representative has urged that peaceful uses must be both “nonmilitary and nonaggressive * * *” U.N. Doc. A/AC.105/C.2/SR.26, 4.

outer space do not fall within the range of permitted legal uses. The United States has stated on a number of occasions that it has no intent to place weapons of mass destruction in space, and has consistently invited the Soviet Union to conform to the same policy.¹⁹

Before turning to a further analysis of reasonable uses of outer space it is necessary to call attention to the problem of gaining access to and of returning from outer space. This involves ingress and egress through airspace. The free use of outer space could be effectively prevented if standards of reasonable use of the airspace on the part of space vehicles—including both rocket propelled and X-15 and X-20 prototypes—are established which depart from the standards applied to such vehicles while they are situated in outer space. It is probable that in the future such vehicles, when returning to earth, will transit for long distances through areas which have been considered as airspace and, as such, subject to the full sovereignty of the subjacent state.

Relatively little attention has been given to the express solution of this essentially legal problem. As has been pointed out previously, no nation has yet protested the orbiting of spacecraft. This has been interpreted to mean that such tacit consent has resulted in the existence of a rule of customary international law on this particular subject.²⁰ The problem of transit through atmospheric areas has been

¹⁹ President Kennedy in his press conference of October 9, 1963, stated that no formal agreement existed between the United States and the Soviet Union to ban nuclear weapons from outer space. He said: "The United States has stated it would not put weapons in outer space. The Soviet Union has stated that it does not intend to do so. Some day they may decide to do so, so we obviously have to take our own precautions. But we don't intend to, though we intend to protect our security. We are glad to hear the Soviet Union does not intend to. This is a matter, it seems to me, that can best be handled not through any bilateral agreement but as a General Assembly matter, because other countries may some day have the same capability, and I think every country should declare that they are not going to put atomic weapons in the atmosphere which could threaten not only the security of a potential adversary but our own security, if for some reason the weapon should miscalculate and descend on us. I think it is a good idea to keep them out of the atmosphere." *New York Times*, October 10, 1963. For U.N. Resolution 1884 (XVIII), October 17, 1963, see *supra*, p. 264. See generally, *infra*, p. 462.

²⁰ The analogy from the law of the sea of innocent passage has been noted by Goedhuis. He has stated that "if the principle that outer space is to be considered as 'res communis omnium' is accepted, then as a necessary corollary, freedom of innocent passage (innocent in the sense of it not being prejudicial to the peace, good order or security of the underlying State) through the space which is not considered to be outer space, should be recognized." "The Question of Freedom of Innocent Passage of Space Vehicles of one State through the Space above the Territory of another State which is

commented on at the U.N. legal subcommittee by the Mexican delegate, who, in referring to the launching of spacecraft and their subsequent transiting through the atmosphere, stated: "In that respect, a conflict with the old laws seemed to have arisen, and the nonspace Powers had accepted new standards in keeping with the general freedom. The implication of those new standards should be considered in greater detail."²¹

Substantial benefits are still to be realized through the free and peaceful use and exploration of outer space and celestial bodies. Accordingly, it might be argued that all the uses of spacecraft which are now considered to be reasonable in outer space should also be considered reasonable in airspace, at least at such time as spacecraft are engaged in normal launch and return. In order for spacecraft to depart from and return to the earth without disrupting typical operational activities in the airspace and on the surface, it will be necessary to arrive at express and detailed international agreements. However, it is submitted that the legal principles permitting reasonable egress from national territory and return thereto by the same spacecraft for peaceful purposes have been clearly formulated.²² Additionally, there is need for an express international agreement fixing the upper limits or zones of the atmosphere in which the subjacent state exercises its not unlimited sovereignty. Further, with respect to spacecraft, pending the express formalization of a rule of innocent passage through the airspace of another nation, a state may waive its sovereignty in order that space vehicles may be used for reasonable and peaceful purposes. However, the need for such an express international agreement on innocent passage does not invalidate the existing principle of space law which permits space vehicles, of the

"not Outer Space," *Second Colloquium* 43. Compare, McDougal, Lasswell and Vlasic, *supra* note 13, at 197-8, 320-359; and Haley, *Space Law and Government* 69-70 (1963). On the other hand, Machowski, a Polish writer on air and space law, considers the matter to be somewhat academic. He nonetheless calls specific attention to national sovereignty over superjacent airspace. "Certain Aspects of the Right of Innocent Passage of Space Vehicles," *Fourth Colloquium* 59. Compare Horsford, "Spy Satellites and The Law," 2 *International Affairs* 310 (1962) who has stated: "It seems that a right of innocent passage will have to be provided through the airspace of adjoining states for outward and returning spacecraft, as there would otherwise be an infringement of sovereignty of these states." See also Williams, "The Law of The Sea: A Parallel for Space Law," Department of the Army, Pam 27-100-22, *Military Law Review* 168 (October 1963).

²¹ U.N. Doc. A/AC.105/C.2/SR.18, 7.

²² *Infra*, pp. 200-253.

type currently in use, to operate peacefully in those areas they have been using since 1957. Within the context of present space practices and activities, this principle has already been established. In short, an express agreement is required to regulate the details of reasonable and peaceful operational activities of spacecraft at low altitudes.

Reasonableness of use may be examined under two basic questions. First, is conduct so inherently destructive of the preferred values of mankind that it cannot be tolerated? Second, is conduct to be deemed unreasonable because of a failure on the part of the resource state to conform to agreed standards which have been designed to modify, and perhaps ameliorate, legitimate national concerns for international peace and security and self-defense?

In view of the hybrid uses of which space vehicles are capable, it is not possible to state categorically that there is complete agreement as to the characteristics of a reasonable use. It is for this reason that the major resource nations are in disagreement as to certain uses. The United States has taken the position that the use of observational satellites is a peaceful, and therefore a reasonable one. The Soviet Union, on the other hand, has contended—with the support of members of the Soviet Bloc—that observation by satellite of subjacent surface areas within the Soviet Union constitutes a form of “espionage.” This contention has been based on the groundless assertion that such “espionage” is violative of international law. The legality of engaging in observation from space will be discussed below.²³

The United States has also taken the position that the use of communications satellites is a peaceful, and therefore a reasonable one. The Soviet Union has contended—again with the support of members of the Soviet Bloc—that the dissemination of certain ideas which have been described as using outer space for “propagating war, national or racial hatred or enmity between nations is inadmissible.”²⁴ This contention has generally been urged under the heading of “war propaganda.” Soviet concern has been based on the belief

²³ *Infra*, pp. 277–295.

²⁴ U.N. Doc. A/AC.105/12, Annex 1, 2. This is Paragraph 5 of the Soviet Declaration of the Basic Principles Governing the Activities of States in the Exploration and Use of Outer Space. *Infra*, pp. 466–468. See pp. 295–300 *infra*, for a discussion of this contention.

Mr. Fedorenko in a statement of the Committee on Peaceful Uses of Outer Space in September 1963 urged the impermissibility of the use of satellites “for war propaganda and for propaganda connected with national and racial hatred and enmity among peoples.” U.N. Doc. A/AC.105/PV 20, 46. See also General Assembly Resolution 1962 (XVIII), *infra*, p. 450.

that communications satellites will reach a state of perfection whereby there may be direct foreign broadcasts to receivers located within the Soviet Union. In view of the well known Soviet policy of maintaining a closed society, the prospect of having both radio and television broadcasts within the uncontrolled grasp of the Soviet population has probably been the cause for this position. The Soviet passion for secrecy and their concern for inspection of space and military facilities has undoubtedly led to the allegation of "espionage." With respect both to "war propaganda" and to the "collection of intelligence information," the Soviet contentions are merely serious proposals or claims. Their views cannot be considered to be either international law or based on international law.

There is, however, a limited agreement between the two major resource nations that some observational and communications activities carried on in outer space are reasonable. There is also full agreement that meteorological activities are reasonable. As to observational activities, the Dryden-Blagonravov Summary of Understandings of June 8, 1962, called for a world geomagnetic survey, including a joint effort to coordinate the launching of two artificial earth satellites equipped with magnetometers. The representatives of the two countries

Recognized that data obtained in earth magnetic observatories were of particularly great importance for the successful compilation of a map of the magnetic field of the earth with the aid of artificial earth satellites.²⁵

Operational programs have been established to engage in these scientific observations and assurances have been given for the exchange of independently acquired data.

In regard to communications activities, the same Understanding made provision for cooperation in 1962 and 1963 "in experiments on communication by means of the U.S. satellite 'Echo A-12'."²⁶ Further, the Understanding announced an intention to "give further consideration to the possibilities of cooperation in joint experiments using active satellites that may be launched by either nation in the future, including the mutual exchange of information on the results of such experiments, and to resume discussions of these possibilities at * * *" a subsequent series of meetings.²⁷

On the subject of meteorology, the Understanding called for the exchange of such "data gathered by each nation from its own experi-

²⁵ U.N. Doc. A/C.1/880, 5. Annex 22, *infra*, pp. 482-488.

²⁶ *Ibid.*, 5.

²⁷ *Ibid.*

mental meteorological satellites * * * with the understanding that such transfers will include selected cloud-cover pictures, especially related to storms, vortices, fronts and the generation of these phenomena, with geographical coordinates provided for all pictures selected, together with nephanalyses based upon the data as a whole * * *. The same communication links would be used to exchange weather charts, diagrams, vertical cross-sections, and the material required for solving the problems of world weather, including the extension of prediction periods.”²⁸ In 1964–1965, during the second stage of the joint meteorological satellite program, the Understanding calls for the coordination of launchings by the two nations of a system of operational weather satellites. Such a program necessitates the determination of mutually agreeable launching “schedules for the operational satellites, the numbers of such satellites, their orbits, and the comparability (to the degree desirable) of the characteristics of their sensors and the data to be obtained.”²⁹

The Understanding, by its delineation of specific areas of use, has provided a basis upon which to project other uses. Thus, if the agreed uses may be considered to be reasonable—and no nation or person has denied that the aforementioned uses are reasonable uses of outer space—it may be stated that comparable or parallel uses may also be reasonable. This is true even though some of the uses may be hybrid. But the fact of hybridity is not important. The important consideration is that certain uses—even if capable of being variously employed in differing situations—have been and are being applied for the benefit of men and nations. However, even without the consensus contained in the Understanding, it is quite clear that those which are both peaceful and beneficial to men and nations may be considered to be reasonable. The Understanding is merely illustrative of specific reasonable uses.

Many other uses of outer space and celestial bodies by means of space vehicles also fall within the category of reasonable uses. These include, but are not limited to, the following: the gathering of geodetic and navigational information, the gathering of scientific and technological information, the gathering of general information affecting space research, the gathering of information relating to weather forecasting and control, the gathering of information facilitating practical communications services and activities, the gathering of information related to general scientific and technological research, and the gathering of information facilitating security and defensive goals even though of a military nature. Additional reasonable uses

²⁸ *Ibid.*

²⁹ *Ibid.*, 3–4.

may be said to include: the employment of space vehicles in ways conducive to obtaining experience in operating such vehicles, general exploration and experimentation, facilitation of resource exploitation, development of know-how in the field of transportation, and for the ascertainment of means and processes whereby protection against disease and forms of contamination may be achieved. In addition, outer space may be used in ways reasonably designed to further man's useful social and political activities both on earth and in outer space and on celestial bodies. Man may also engage in such additional activities required to facilitate any or all of the foregoing, including such incidental activities as the recovery of space personnel, vehicles, and equipment. Such reasonable activities have their situs both on the earth, in the atmosphere, and in outer space. As man continues to gain experience in the peaceful use and exploration of outer space and celestial bodies, many uses, in addition to these mentioned, will qualify as reasonable uses.³⁰

C. THE SPECIAL SOVIET VIEW OF OBSERVATIONAL ACTIVITIES

The Soviet social system has produced a national "obsession for secrecy * * *" ³¹ which has conditioned not only the Soviet policy toward disarmament and arms control, but has also materially affected their views of the legality of space vehicles equipped to scan both earth and the vast inter-stellar reaches of outer space. Secretary of State Rusk has described the Soviet habit of referring to observation—inspection in a disarmament context—as "espionage." He stated in 1962:

I would not try to say whether this is a deep-seated, traditional passion for secrecy on the Russian scene or a consequence of the

³⁰ Compare, Bloomfield, ed., *Outer Space Prospects for Man and Society* (1962); Hogan, "A Guide to the Study of Space Law," 5 *St. Louis University Law Journal* 79-133 (1958); Lipson and Katzenbach, *The Law of Outer Space: Report to the National Aeronautics and Space Administration* (1960); Odishaw, ed., *The Challenges of Space* (1962); Ramo, ed., *Peacetime Uses of Outer Space* (1961); Goodwin, *Space: Frontier Unlimited* 60-83 (1962); Goldsen, "Some Social Implications of the Space Program," 6 *American Behavioral Scientist* 5 (March 1963). *First, Second, Third, Fourth Colloquim on the Law of Outer Space 1959-1962;* and *Legal Problems of Space Exploration, A Symposium* (1961). No protest has been recorded respecting the uses reported to the United Nations in connection with the launches engaged in by the U.S.A. and the U.S.S.R. These uses are recorded in *U.N. Docs. A/AC.105/Inf.*

³¹ Rusk, "United States Again Calls for Action on Drafting of Disarmament Treaty," 47 *Department of State Bulletin* 245 (1962); Rusk, "Basic Issues Underlying the Present Crisis," 47 *Department of State Bulletin* 870 (1962).

belief that secrecy is an important military asset. It is probably a combination of these and many other factors.

But whatever the reasons behind this alleged preoccupation with espionage, three things seem to me to be clear.

One is that the major powers know all that they need to know about each other to inflict devastating damage in the event of war. Espionage in its classical sense is no longer relevant to this great overriding issue.³²

Even though in a practical sense the two major resource nations may know enough about each other's military and defense posture to inflict great damage in the event of war, and even though espionage in its classical sense may not be relevant to the space age, it is nonetheless true that the Soviets have asserted that United States observational satellites have been engaged in "espionage" of the Soviet Union from outer space. By injecting this issue into the legal discussions carried on in the committees of the United Nations, the Soviets have contributed to the difficulty of arriving at express agreements on space law principles and rules.

The Soviet attitude toward "espionage" from superjacent areas has been influenced by certain acts of observation or reconnaissance which have taken place in Soviet airspace. Soviet authors, in discussing the problem of sovereignty over the airspace, wrote in 1956, "At the beginning of 1956, large balloons fitted with special apparatus for reconnaissance by aerial photography and launched by U.S. military bodies, began to penetrate into the airspace of the people's Democracies and the U.S.S.R."³³ In 1960, the Soviets became aware of reconnaissance carried out via overflights of the U-2 type aircraft, and from over the high seas—as in the case of the RB-47—and in both instances complained of the "real or alleged 'violation' of its 'frontiers' or airspace by American aircraft."³⁴

The observational capabilities of aircraft and spacecraft when directly over a state or when adjacent thereto are unquestionably extensive. At the present time, the observational capabilities of space vehicles are so extensive and their observational techniques are so versatile that they can be very efficient, even though at the time their observational activity is conducted they need not be either over a state

³² *Ibid.*

³³ Kislov and Krylov, "State Sovereignty in Airspace," *International Affairs* (Moscow) 34 (March 1956); *Legal Problems of Space Exploration, A Symposium* 1037.

³⁴ Lissitzyn, "Some Legal Implications of the U-2 and RB-47 Incidents," 56 *A.J.I.L.* 136 (1962). See, Wright, "Legal Aspects of the U-2 Incident," 54 *A.J.I.L.* 836 (1960).

or its territorial waters. In fact, the vehicle may be a long distance both horizontally and laterally from the observed area. Mere "overness" or physical proximity does not impede successful observational results.

These facts bring into focus both the extent of national sovereignty and the extent of national control over superjacent areas, e.g., the airspace and outer space. Lissitzyn and Crane have examined the views of Soviet lawyers, and have independently arrived at the view that the Soviets recognize upper limits to national sovereignty. Thus, Lissitzyn has written that "Since the launching of Sputnik I in October, 1957, Soviet writers have been virtually unanimous in expressing the view that state sovereignty has or should have an upward limit and should not extend infinitely into space, but have not suggested any specific boundary between airspace which is under national sovereignty and outer space which is not."³⁵ The force of U.N. General Assembly Resolution 1721 (XVI) has also been to prevent sovereignty from applying in outer space. However, the freedom of peaceful use and exploration of outer space need not be unlimited. Thus, the Soviet contention that orbiting observational satellites in outer space constitutes a form of "espionage" has served as a means to ascertain that if this assertion is accepted, one form of control over the free and peaceful uses of outer space is created. In short, the problem is to determine whether a specific type of observation by satellite is unreasonable, illegal, and subject to some form of either national or international control.

It should be noted that the Soviet proposed draft declaration of basic principles, which constitutes their official claim regarding "espionage," provides that "9. The use of artificial satellites for the collection of intelligence information in the territory of a foreign State is incompatible with the objectives of mankind in its conquest of outer space."³⁶ Interpreted literally, intelligence information

³⁵ Lissitzyn, *supra* note 34, at 137. Crane "Communist Viewpoints," *Legal Problems of Space Exploration, A Symposium* 1012-1014.

³⁶ U.N. Doc. A/AC.105/12, Annex 1, 2. The Soviets have displayed no willingness to depart from this viewpoint. U.N. Doc. A/AC.105/PV.20, 46 (September 1963). The same position has been advanced in the Soviet Draft International Agreement on the Rescue of Astronauts and Spaceships Making Emergency Landings. Thus, in the second paragraph of Article 7 it has been proposed that "Space vehicles aboard which devices have been discovered for the collection of intelligence information in the territory of another State shall not be returned." U.N. Doc. A/AC.105/12, Annex 1, 4. This would create an exception to the prescribed duty to return, provided other conditions had been met.

would not seem to include a great deal of the observational activity carried on by artificial satellites, and, by way of random example, could hardly be construed to deal with such meteorological information gathering as relates to cloud cover, the amount of energy received on earth and in space directly from the sun, the amounts of energy reflected by clouds, ice, snow, and other bright objects, and the amount of energy radiated by earth.³⁷ Nor could it be thought to inhibit the gathering of navigational and geodetic information. The list of items of information which it is, and would be, reasonable for satellites to collect might be extended indefinitely.

The Soviet view that the collection of intelligence information in the territory of a state should be considered to be "espionage" is based on the concept of security. The Soviet effort to arrive at specific instances of control over the free use of outer space for peaceful purposes has been clearly demonstrated by Zhukov. He has stated that "each state has a right to use outer space at its own discretion, but without causing harm or damage to other states."³⁸ It was his further view that the United States has a national policy and plans to engage in "space espionage directed against the security of the U.S.S.R. and the other Socialist countries [and this policy and plans are] incompatible with the generally recognized principles and rules of international law, designed to protect the security of states against encroachments from outside including outer space. In the past, considerations of state security have been of decisive importance in determining the airspace regime. Today the same considerations must underline the regime of outer space."³⁹

The Soviets have identified the Midas, Samos, and Tiros type satellites as those, among others, that were intended to reconnoiter their rocket and missile bases.⁴⁰ Some Soviet writers have contended that

³⁷ These were mentioned by Dr. Richard W. Porter, Chairman, USNC Technical Panel on the IGY, in his testimony in 1958 to a subcommittee of the House Committee on Appropriations. The peaceful and scientific nature of such information gathering seems obvious. *Review of the First Eleven Months of the International Geophysical Year*, 85th Cong., 2nd Sess., 146 (1958).

³⁸ Zhukov, "Space Espionage Plans and International Law," *International Affairs* (Moscow) 53-57 (October 1960); *Legal Problems of Space Exploration, A Symposium* 1099.

³⁹ *Ibid.*, 1098-1099. Korovin has asserted that espionage in peacetime "is an act of political aggression." "Peaceful Co-operation in Space," 1962 *International Affairs* (Moscow) 61 (March 1962); Compare, Zhukov, "Practical Problems of Space Law," *International Affairs* (Moscow) 26 (May 1963).

⁴⁰ Kucherov, "Soviet Attitude Toward International Law and Outer Space," Chapter VI of *Soviet Space Programs: Organization Plans, Goals, and International Implications*, U.S. Senate Committee on Aeronautical and Space Sciences 208 (1962). Crane, *supra* note 35, at 1014-1015.

satellite "espionage" was being conducted by the United States in order to facilitate an aggressive, and presumably, surprise attack against the Soviet Union. Thus, the charge has been made that "The United States and other imperialist Powers want to militarize outer space, seeking to turn it into a new theatre of hostilities."⁴¹

Traditional international law has never considered "espionage" to be unlawful. It has, in fact, endeavored to regularize the treatment of captured spies. It is true, however, that espionage as defined in the laws of states constitutes a crime under much municipal legislation. Such laws have taken into account the individual's location when engaged in espionage activities as well as the type of activity in which the individual is engaged. At this time these laws regard espionage as an intentional and prohibited act of an individual. Whether information gathering by a machine, particularly an unmanned machine, constitutes a crime pursuant to most municipal laws as presently written, is doubtful. On the other hand, Goedhuis has taken the view that the invasion of a state's territorial airspace by an information gathering satellite could properly result in summary action. He has suggested that if the space vehicle of one state, while in orbit, were to pass through the airspace of another state—and this, of course, assumes that there is agreement as to the boundary between airspace and outer space—"it is clear that a State has a right to take affirmative measures against these satellites for an infringement of its sovereignty as well as for a breach of municipal law concerning espionage."⁴² This view, perhaps, assumes too much. First, if the space vehicle's function is a peaceful one—and it has never been thought that during a nonwarlike situation an information-gathering function of a maritime vessel beyond the territorial seas was other than a peaceful one—then a subjacent state would not be permitted to extend its municipal law to such a function when the space vehicle was in outer space above the nation's territory. Second, while it is clear that sovereignty does not determine the areas in which a state may exercise defensive rights, Goedhuis' view assumes that the information gathering function of the spacecraft is unreasonable in that it is likely to cause serious harm to the national well-being of the subjacent state. Another reason for his view may be that at the present time there does not appear to be any effective way to determine whether the function of the transiting satellite is

⁴¹ "Forum: Space Exploration and International Relations," *International Affairs* (Moscow) 57-63 (June 1961); *Soviet Space Programs*, *op. cit.*, 306.

⁴² Goedhuis, "Some Trends in the Political and Legal Thinking on the Conquest of Space," 9 *Netherland International Law Review* 124 (1962).

dangerous or not to the security of the subjacent state. Third, if it is true that the function of the satellite while in outer space is a peaceful one, the activity by the satellite in the airspace of the subjacent state while temporarily transiting in the process of launch or landing must also be considered to be peaceful. Finally, Goedhuis assumes that municipal laws have clearly defined information gathering, by an unmanned space vehicle while in the airspace, to be municipal espionage. This may be if the statute so provides. International law, however, is not the product of the policy of a single state, and the fact that the Soviet expressions concerning "espionage" in space do not constitute international law has been noted by one distinguished Soviet international lawyer. Koretsky, at the 49th session of the International Law Association, charged that the use of information gathering satellites was violative of the Charter of the United Nations, but that the use of the Discoverer type satellite was "taking advantage of the lack of regulations covering what satellites may or may not do in orbit."⁴³

In international law, espionage in the traditional sense consists of wartime conduct. Wartime espionage is governed by Articles 29-31 of the Regulations of The Hague 1907 Convention IV.⁴⁴ Article 29 defines a spy as a person who engages in spying, who acts clandestinely or on false pretenses, who obtains or endeavors to obtain information, and who performs the prohibited conduct in the zone of operations of a belligerent with the intention of communicating it to the hostile party. The 1907 Regulations place emphasis on the fact that such conduct is individual conduct, and provide, for example, in Article 30, that a spy shall not be punished without trial.

A recent analysis of the law of espionage states "The act of spying is not in violation of international law. Punishment of captured spies is permitted as an act of self-protection, the law equally permitting the one to send spies, the other to punish them if captured."⁴⁵

Spying in peacetime has not been defined by treaty. A recent United States Army publication states with regard to the conduct of espionage under such condition that it "is not considered wrong morally, politically, or legally * * *"⁴⁶ In such circumstances captured spies are punished under appropriate national laws because "The sole norm in peacetime is the municipal law of each state in the

⁴³ *Ibid.*, note 17. The quoted words are those of Goedhuis.

⁴⁴ 36 Stat. 2277.

⁴⁵ II Department of the Army Pam 27-161-2, *International Law* 58 (1962). Compare, II Lauterpacht-Oppenheim, *International Law* 422 (7th ed. 1952); FM 27-10, *Law of Land Warfare* par 77 (1956).

⁴⁶ *Ibid.*, 61. Compare, I Lauterpacht-Oppenheim, *International Law* 859, 862 (8th ed. 1955).

absence of a commonly agreed international rule similar to the IV Hague Convention. If the act alleged violates the municipal law of the country in question, that is sufficient for the trial to proceed."⁴⁷

The effort by the Soviet Union at the United Nations to make intelligence gathering in a nation by satellite a violation of international law seeks to modify existing international law. In this instance the Soviet Union appears to be following the precept that information gathering by satellites is permitted until it is prohibited. But, by their protests they have given the impression that such information gathering is not an acceptable peaceful, and hence reasonable, use of outer space. Much of their difficulty has arisen from their refusal to recognize that United States observational activities, as well as their own, are exceedingly varied. Furthermore, they have not been willing to admit that the purpose of the United States in gathering Soviet military information has been to obtain facts of prospective Soviet military activity so that defensive planning may be undertaken rather than, as the Soviets have perhaps believed, for engaging in aggressive uses.

In view of the importance of the problem, a short resume of Soviet efforts to put intelligence gathering activities into the category of unreasonable and even nonpeaceful uses will be attempted. Their efforts to employ the language of "espionage" in order to achieve guarantees against "an invasion of privacy" will have substantial impact upon the future of international cooperation in outer space.

As previously pointed out, there is a general consensus that spacecraft ought to be returned to the launching state when it comes down in the territory of another or on the high seas. This view was challenged by the Soviet delegate to the First Committee in December 1962, when he suggested that an exception "would be made in the case of a vehicle aboard which devices have been found for the collection of intelligence data from the territory of another States (sic)." ⁴⁸ It was argued that such an exception should be based on the view that such gathering of information was incompatible with the Charter and involved the "violation of the sovereignty of another State. It is indubitable that espionage is such a violation, even if it is effected from space."⁴⁹

⁴⁷ *Ibid.*, note 88, at 61. The espionage statute of the United States is 18 U.S.C., 793 and 794. It applies to both wartime and peacetime situations, seems to apply only to individuals, and makes illegal the obtaining of information and the passing of it on to a foreign power. The place in which or from which the information is obtained is not limited in the statute.

⁴⁸ U.N. Doc. A/C.1/PV.1289, 56. See Annex 2, *infra*, pp. 443-446.

⁴⁹ *Ibid.*

The division between the United States and the Soviet Union on this point may best be reflected by quoting from Senator Gore's speech to the Committee and the reply of Mr. Morozov. Senator Gore stated that one of the consequences of the hybrid capabilities of space vehicles was that:

Any nation may use space satellites for such purposes as observation and information-gathering. Observation from space is consistent with international law, just as is observation from the high seas. Moreover, it serves many useful purposes. Observation satellites can measure solar and stellar radiation and observe the atmosphere and surfaces of other planets. They can observe cloud formations and weather conditions. They can observe the earth and add to the science of geodesy. Observation satellites obviously have military as well as scientific applications. But this can provide no basis for objection to observation satellites.

With malice toward none, science has decreed that we are to live in an increasingly open world, like it or not, and openness, in the view of my Government, can only serve the cause of peace. The United States, like every other nation represented here in this Committee, is determined to pursue every non-aggressive step which it considers necessary to protect its national security and the security of its friends and allies, until that day arrives when such precautions are no longer necessary.⁵⁰

Mr. Morozov introduced his remarks by stating that the foregoing constituted an attempt at theoretical justification of illegal observation and information gathering activities. He said:

We cannot agree with the claim that all observation from space, including observation for the purpose of collecting intelligence data, is in conformity with international law—a conclusion which could be drawn from the statement made this morning by the representative of the United States. Such observation is just as wrong as when intelligence data are obtained by other means, such as by photographs made from the air. The object to which such illegal surveillance is directed constitutes a secret guarded by a sovereign State, and regardless of the means by which such an operation is carried out, it is in all cases an intrusion into something guarded by a sovereign State in conformity with its sovereign prerogative. Thus such observations are in violation of the sovereignty of States, and no analogy exists here with principles applying to the open seas. If it were merely

⁵⁰ *Ibid.*, 13-15.

a case of observing what happens on the high seas, one could of course accept this analogy; but when it is a case of observation on the high seas for purposes of collecting intelligence information, then we are dealing with an intrusion into the sovereign rights of States, an attempt to penetrate into that which a State tries to protect on its territory. And I should add to this the further fact that, for technical reasons, one cannot find out by observation on the high seas what one can find out from outer space.

Thus this analogy used by the representative of the United States can be considered neither from the factual nor from the legal angle as valid and applying to the situation we are at present discussing. For these reasons we consider that the activities involved are incompatible with the provisions of the United Nations Charter. Such gathering of intelligence data through the use of space vehicles is in violation of the sovereign rights of States, and if outer space is to be used in peaceful cooperation, such operations cannot be regarded as legal or in conformity with international law, and hence there could be no question of the possibility of defending such a position on the basis of international law and generally recognized principles.⁵¹

The Soviet representative did not provide any information concerning the content of "intelligence data," and the subsequent discussions have not achieved specificity as to such content. However, the subject has received no little attention in the legal subcommittee of the Committee on the Peaceful Uses of Outer Space, April–May 1963, and again during September 1963.⁵²

The Soviet Union, as the proponent of the view that the gathering of intelligence data in a state by means of a transiting satellite is "espionage" and therefore violative of international law, has assumed the affirmative duty of proving these claims to be both valid and acceptable. In seeking to prove its point it has raised the following arguments. As noted above, it has been asserted that it is wrong to engage in the gathering of intelligence since it is allegedly an invasion of sovereignty, of the UN Charter, international law, and the concept of peaceful cooperation. It is the Soviet view that since it is wrong to gather information by way of aerial photographs made by superjacent aircraft, it is equally wrong to do so from outer space.

⁵¹ *Ibid.*, 57. The Soviet argument that the use by the United States of information gathering satellites is illegal has been summarized by Crane in "Soviet Attitude Toward International Space Law," 56 *A.J.I.L.* 704–706 (1962).

⁵² *U.N. Docs.* A/AC.105/PV.20, 21, 22, 23.

Accordingly, neither the altitudes nor the means employed may be considered as significant distinguishing differences.

Nonetheless, the Soviets do not admit that they are limited in their intelligence gathering activities conducted on the high seas or from outer space. The absence of national sovereignty over the high seas is given as their reason for the lawfulness of such conduct. Such reasoning presumably would also apply to intelligence gathering from the airspace above the high seas and outer space above the same air-sea space environment concerning events in such areas. But in the April–May 1963, U.N. debates, the Soviet delegate rejected, as lacking in factual and legal validity, an analogy between intelligence gathering activities within a nation from the high seas and the same activities conducted from outer space. Apparently he drew some significance from the fact that observational equipment, technically capable of obtaining information on or from the high seas, need not serve effectively when used in outer space, and also that the latter dimension was a more favorable observation position.

The Soviet delegate told the legal subcommittee on April 17, 1963, that the altitude from which “espionage” occurred—apparently the same meaning has been attached by the Soviets to this term as that of collecting intelligence information—did not serve to distinguish such activities from comparable ones engaged in at lower altitudes. He again asserted that when such activity was conducted in the territory of a sovereign state, it was incompatible with the objectives of mankind in the conquest of outer space and with the theory and practice of international law. He again argued that since such conduct had been prohibited by national laws, the same principle “should” apply to espionage in outer space.⁵³ He also urged that the 1907 Hague and the 1944 Chicago Conventions had relevancy, and said that “Provisions of the Hague Convention of 1907 respecting the Laws and Customs of War on Land outlawed spying, and satellites used for the collection of intelligence material would be spies. Article 36 of the Convention on International Civil Aviation signed at Chicago in 1944 stated ‘Each contracting State may prohibit or regulate the use of photographic apparatus in aircraft over its territory.’”⁵⁴ The Chicago Convention, however, has no applicability to spacecraft in space.

⁵³ U.N. Doc. A/AC.105/C.2/SR.17, 7.

⁵⁴ *Ibid.* Haley appears to be in error when he concludes that it is “accepted international law” that “no man-made object or vehicle may pass over it [“every sovereign nation”] at any height if such passage is for the purpose of acquiring military intelligence.” Haley, *supra* note 21, at 91. Compare, McDougal, Lasswell and Vlasic, *Law and Public Order in Space* 491–496 (1963).

In contending that the substance of municipal law provisions dealing with espionage "should" be applied to conduct in outer space, the Soviet representative, by implication, admitted that the rule had not been incorporated into international law. In asserting that "espionage" in outer space was incompatible with the practice of international law, one may perhaps conclude that the Soviet representative was acknowledging that as of that time no such conduct had been engaged in, although, as noted above, many private Soviet writers have contended that certain types of United States satellites were engaged in "unlawful" information gathering activities. Finally, the claim by the Soviets concerning the applicability of the 1944 Chicago Convention was made in the face of the fact that the Soviets have never become a party to that agreement. Furthermore, they have never stated that they were not engaged in information gathering activities in other countries. In fact Premier Khrushchev acknowledged in May 1964, that Soviet satellites had photographed military installations at high altitudes.

On April 26, 1963, the Soviet delegate again made reference to the problem of intelligence gathering by means of satellite. On this occasion, emphasis was placed on the contention that such conduct was contrary to the interest of friendly international relations and the immateriality of the altitude from which such observation took place was again asserted. Additionally, the analogy of freedom of observation on the high seas was again rejected, and the Soviet delegate pointed out that there were in fact numerous limitations upon the independence of national ships, namely, nations had established "either temporarily or permanently—warning, danger, restricted or prohibited areas for numerous purposes."⁵⁵

It was the Soviet view that the acceptance of a rule respecting the gathering of intelligence information in a state was "simply a confirmation and extension of an accepted principle of international law."⁵⁶ The unwillingness of other states, it was charged, to accept such a rule was "evidence of a desire * * * to reserve the possibility of using outer space for espionage purposes."⁵⁷

As has been noted, the Soviet draft agreement on emergency landings also suggested that the collection of intelligence information in the territory of a foreign state was wrong and in conflict with the objectives of mankind in the conquest of outer space.⁵⁸ In comment-

⁵⁵ U.N. Doc. A/AC.105/C.2/SR.22, 5.

⁵⁶ *Ibid.*

⁵⁷ *Ibid.*

⁵⁸ *Supra*, pp. 271-286.

ing on this proposal, the Soviet delegate told the subcommittee on April 30, 1963, that "it could not be seriously supposed that a State finding a spy satellite with equipment containing photographs of strategic objects on its territory would return that satellite untouched to the launching State, since the return of the satellite would adversely affect the security of the State in which it had landed."⁵⁹

Before the subcommittee concluded its April-May 1963, session, the delegates endeavored to summarize the achievements of the meetings. The Soviet delegate protested that the United States had declined even to discuss the Soviet contention dealing with the gathering of intelligence in a state by use of an artificial satellite. It was acknowledged, however, that there had been numerous protests against the Soviet proposals, and notice was served by the Soviets that they had not given up their support of the wholly novel view of this phase of international law. It was stated that "All attempts to reconcile the collection of intelligence information by artificial satellites with the principles of international law were completely unfounded. Espionage in any environment was inadmissible and it was prohibited by every system of national law."⁶⁰ However, by September 1963, the Soviet Union's delegate to the Committee on The Peaceful Uses of Outer Space was content in a long speech merely to say that his country attached "considerable importance to efforts finally to achieve agreement on the question of the impermissibility of the use of satellites for collecting intelligence information."⁶¹ It should also be noted that General Assembly Resolution 1962 (XVIII) fails to take any account of the Soviet point of view.

The Soviet position did receive limited support in the April-May 1963, deliberations of the subcommittee. Thus, some of the states composing the Communist bloc, such as Romania,⁶² Hungary,⁶³ Bulgaria,⁶⁴ and Albania,⁶⁵ considered the Soviet proposals to be either humanitarian or based on sovereign rights and designed to eliminate conditions inimical to the cause of peace. All, as did the Soviet Union, argued that such proposals *should* be incorporated into the

⁵⁹ U.N. Doc. A/AC.105/C.2/SR.25, 14.

⁶⁰ U.N. Doc. A/AC.105/C.2/SR.28, 13.

⁶¹ U.N. Doc. A/AC.105/PV.20, 46.

⁶² U.N. Doc. A/AC.105/C.2/SR.18, 10.

⁶³ U.N. Doc. A/AC.105/C.2/SR.21, 4. "Espionage, which was contrary to the principles of international law and was generally prohibited by national legislation, should be specifically prohibited in outer space and the possibility of any violation should be precluded."

⁶⁴ U.N. Doc. A/AC.105/C.2/SR.23, 8.

⁶⁵ U.N. Doc. A/AC.105/C.2/SR.24, 4.

body of international law, and that this might be accomplished by the acceptance of the Soviet drafts. None, however, made any effort to offer any detail as to the meaning of "intelligence information."

During the April-May 1963, meetings of the subcommittee, the United States made no effort to debate the Soviet proposal. It preferred to engage in the actual practices followed from 1957 to the present and the position of the United States is well known. In an address delivered on April 13, 1963, Mr. Meeker, Deputy Legal Adviser, Department of State, made it clear that observation from space to space, airspace, and to the earth was governed by the Charter of the United Nations, by international law, and, in particular, by Resolution 1721 (XVI) which commended to the countries of the world the principle that outer space and celestial bodies are free for lawful exploration and use. It was his general proposition that "observation of the earth from outer space is a legitimate and permissible activity in the peaceful exploration and use of space. Observation neither works nor threatens injury or damage to any persons or things on earth."⁶⁶ He therefore concluded that "observation from space comes within the freedom which the General Assembly has recognized * * *" in Resolution 1721 A 1 (b).⁶⁷

After pointing to the hybrid uses of space vehicles, Meeker noted their importance in the promotion of international security. He stated that:

Another important potential use of observation in space is the possibility of acquiring information about military preparations, and thus help in maintaining international peace and security. One of the great problems in today's world is the uncertainty generated by the secret development, testing, and deployment of national armaments and by the lack of information on military preparations within closed societies. If in fact a nation is not preparing a surprise attack, observations from space could help us to know this and thereby increase confidence in world security which might otherwise be subject to added and unnecessary doubts.⁶⁸

On this basis he arrived at an important conclusion, and related it to the international law of outer space. He stated:

The fact that observation satellites clearly have military as well as scientific and commercial applications can provide no

⁶⁶ Meeker, "Observation in Space," *Department of State Press Release No. 191* (Revised), April 12, 1963, 2. Compare, Gardner, "Cooperation in Outer Space," 41 *Foreign Affairs* 345, 347 (1963).

⁶⁷ *Ibid.*, 2.

⁶⁸ *Ibid.*, 5.

basis for objection to observation satellites. International law imposes no restrictions on observation from outside the limits of national jurisdiction. Observation from outer space, like observation from the high seas or from air space above the high seas, is consistent with international law.⁶⁹

On May 3, 1963, Mr. Meeker summarized before the legal subcommittee the points on which a consensus had been achieved. Specifically, it had been understood that there existed "freedom of outer space for exploration and use by all States, on a basis of equality in accordance with international law; on the immunity of celestial bodies from national appropriation; on the applicability of international law, including the United Nations Charter, to relations among States in outer space; on retention by the launching authority of jurisdiction over the ownership of space vehicles; on assistance to astronauts in distress and return of space vehicles and their personnel, and on liability for injury or damage caused by space vehicle accidents."⁷⁰ It is noteworthy that no direct reference was made to the Soviet proposals relating to the gathering of intelligence data.

The Soviet proposals have also been rejected by other states participating in the deliberations of the legal subcommittee. Thus, the Italian delegate on April 22, 1963, held that the Soviet proposals fell under the heading of "observation" rather than "that of espionage. [It was his view that] Observation for peaceful and indeed deserving purposes had heretofore been considered to be consistent with international law, as in the practice of observation from the high seas. If the concept of freedom of the high seas was to be extended to outer space, precedent would not support the exclusion of such activity in outer space."⁷¹ In the same context the Canadian delegate rejected the Soviet contention that the same national rights existed with respect to observational conduct in outer space as are permitted in the airspace by reason of Article 36 of the Chicago Convention.⁷² He also supported the general analogy of the law of the sea as applicable to outer space. Other delegates also noted and expressed disagreement with the Soviet proposal.⁷³

⁶⁹ *Ibid.*, 6.

⁷⁰ U.N. Doc. A/AC.105/C.2/SR.28, 9.

⁷¹ U.N. Doc. A/AC.105/C.2/SR.20, 4.

⁷² U.N. Doc. A/AC.105/C.2/SR.21, 7. Article 36 of the Chicago Convention provides "Each contracting State may prohibit or regulate the use of photographic apparatus in aircraft over its territory." *Stat.* 1180. The United Kingdom's delegate also rejected the applicability of the article. U.N. Doc. A/AC.105/C.2/SR.24, 12.

⁷³ U.N. Doc. A/AC.105/C.2/SR.28, 5. Compare, Williams, *supra* note 20, at 155.

The Soviet position on the gathering of information from outer space has demonstrated a unique inconsistency. There has been a consistent attack on the propriety of United States information gathering satellites while at the same time there has been Soviet support for the legality of their own space flights.⁷⁴ More important, however, has been a nonofficial Soviet charge that such United States space flights were unlawful as contrary to Resolution 1721 (XVI). The United States has construed the resolution to mean that outer space is free for peaceful use and exploration, and that all beneficial uses other than activities constituting force or threats of force, i.e., aggression, against another state or states in violation of international law or the Charter of the United Nations, were legally permissible. As to this position one Soviet writer has alleged: "In contravention of the U.N. General Assembly's resolution of December 20, 1961, on the extension of international law to outer space, which is to be used only for the benefit of mankind and in the interests of states, the U.S.A. has stubbornly continued to launch its spies-in-the-sky, secret satellites, military satellites and other satellites carrying secret testing devices."⁷⁵ Thus, the Soviet position has been made clear. It is their view that such observational techniques, like those pursued by both unmanned balloons and manned aircraft superjacent to and within close proximity to Soviet land areas, are inherently illegal. However, while mere unauthorized entry by balloons and aircraft into airspace has been deemed to be a violation of the sovereignty of the subjacent state,⁷⁶ the Soviets have urged that all intelligence gathering satellites were illegal—being engaged in "espionage"—and would therefore be considered by the Soviets as engaged in "aggressive conduct."⁷⁷

The Soviets have not made clear their reason for attaching special importance to the collection of intelligence data by means of artificial satellites, although their objection appears to be based on the wide coverage afforded by satellites. However, intelligence information may be acquired by a number of other means, including radio signals,

⁷⁴ Lipson, "An Argument on the Legality of Reconnaissance Satellites," 1961 *Proceedings of the American Society of International Law* 174 (1961).

⁷⁵ Korovin, "International Law Through the Pentagon's Prism," *International Affairs* (Moscow) 5 (December 1962). Compare, Zhukov, "Space Espionage Plans and International Law," *International Affairs* (Moscow) 53-77 (October 1960; *Legal Problems of Space Exploration, A Symposium* 1095-1101; Zhukov, "Practical Problems of Space Law," *International Affairs* (Moscow) 27 (May 1963).

⁷⁶ Lissitzyn, *supra* note 34, at 137.

⁷⁷ Zhukov, "Space Espionage," *op cit.*, 1096-1098. Compare, Bloomfield, *Outer Space* 173 (1962).

radar, and other processes when mounted on naval vessels, balloons, rockets and aircraft. Thus, the principal objection to satellites seems to be that they are highly efficient in accomplishing their mission, rather than objection to their location or the fact that they may be manned or unmanned. Their "aggressive" nature, according to the Soviets, has been based principally upon their utility and not at all upon any capability of engaging in overt or forceful conduct. The charge of "espionage" has suggested that Soviet planning was unable to accept, on the basis of mutuality, the challenge of equal observational opportunity.⁷⁸

It would appear that the Free World for policy considerations is obliged to reject the claim that intelligence gathering satellites are engaged in aggressive conduct. To accept this contention would constitute a capitulation to the principles and assumptions of a closed society, and might ultimately lead to other restrictions on the full and free use of outer space for peaceful, i.e., nonaggressive and beneficial, purposes.

The Soviet claim that the collection of intelligence information in the territory of a sovereign state constitutes "espionage" and that such "espionage" violates the principles of international law has no legal foundation. International law, both customary and conventional, makes no provision for espionage in time of peace. Articles 29–31 of the Regulations of the Fourth Hague Convention, 1907, deal with espionage in time of war. It is clear that the prohibited conduct under those circumstances is that of an individual who is entitled to a trial. This would seem to exclude unmanned satellites. The activity must be clandestine, but here the United States has given full advance publicity to its manned space activities, has made reports to the United Nations of its manned and unmanned launches, and has provided extensive official news releases so that the world public has been made aware of such activities—so much so that Soviet writers have been able to discuss these successes in great detail.

Espionage in wartime, if not carried out in a clandestine manner, to result in punishment, must be undertaken pursuant to false pre-

⁷⁸ Deutsch, "A World of Moderate Rivals," in Goldsen, ed., *International Political Implications of Activities in Outer Space* 181 (1960). He has suggested that under conditions of moderate rivalry, space powers may exercise some restraint in space activities, including the toleration of overflights in an area designated as "reconnaissance space." At such a distance a satellite would be able to obtain "relevant military information about objects and activities on the ground." Where the rivalry has gone beyond this condition the opposing states may be induced to "try to shoot down" objectional satellites. Falk, "Space Espionage and World Order," in Stanger, ed., *Essays on Espionage and International Law* 55 (1962).

tenses. No record has been made of a satellite purporting to be something else. The uniformed wartime occupant, if any—like an aviator or any other military person—(assuming he were to be charged with spying) would be entitled to the protection of the Regulations attached to the Fourth Hague Convention, 1907.

The fact that states have enacted municipal laws prohibiting conduct which has been defined unilaterally as espionage, even when the defined conduct is engaged in beyond jurisdiction of the subject state, need not establish international standards, and even less, international law. Surveillance at approximately 68,000 feet, as in the case of the U-2, has been described by the Secretary of State of the United States as "aerial surveillance by unarmed civilian aircraft."⁷⁹ It has been generally conceded that such observation was not espionage in the conventional international sense.⁸⁰ Since peacetime international law is remarkably devoid of content relating to conduct, which if engaged in during wartime might legitimately have been regarded as espionage,⁸¹ the Soviet response to the U-2 and RB-47 flights was to assert that such conduct was aggressive. It was the Soviet view that the conduct was a violation of its sovereign frontiers of airspace.⁸² The Security Council refused to condemn the U-2 flight as aggressive by a vote of 9-2.⁸³ Although the Soviet Union shot down the U-2, it did not claim or admit the right to shoot down the RB-47 (United States aircraft), when "over the high seas, even if it is a military aircraft which may be engaged in military reconnaissance."⁸⁴

Although international law has not interdicted the collection of intelligence data in a given country when accomplished from the high seas and from the airspace superjacent to the high seas, a state—on security grounds—can punish the invasion of its airspace. Sanctions have been imposed whether the infraction has been accomplished intentionally to obtain intelligence data or has been quite accidental, and not involving the acquisition of data.

It has been sometimes contended that the gathering of intelligence data by satellite violates the basic principle of international law

⁷⁹ Beresford, "Surveillance Aircraft and Satellites: A Problem of International Law," 27 *The Journal of Air Law and Commerce* 113 (1961).

⁸⁰ *Ibid.*

⁸¹ Cohen, "Espionage and Immunity—Some Recent Problems and Developments," 25 *Brit. Int'l L.* 404 (1948); Cohen-Jonathan and Kovar, "L'Espionage en Temps de Paix," 1960 *Annuaire Francais De Droit International* 238-255 (1961).

⁸² Lissitzyn, *supra* note 34, at 136, 138-140.

⁸³ U.N. Doc. S/4384, S/4385 and S/4406 (1960).

⁸⁴ Lissitzyn, *op. cit.*, 140.

whereby each sovereign state must respect the territorial integrity and political independence of others. Thus, it has been suggested that espionage in peacetime is a form of intervention which cannot be legally justified "on the ground that it is carried on as part of a crusade against communism."⁸⁵ The claim of a state to engage in observational activities may be based on the fundamental doctrine of self-defense or on its right to enjoy the condition of international peace and security. Since the world community possesses a decentralized decisional process, it is clear that such principles may be opposed by Soviet claims based either on the duty of peaceful intercourse, or nonintervention in internal affairs, or on their view of self-defense, peace, and security.

International law does not interdict all activities of a state which are not appreciated by other states. It prohibits only such conduct as has been agreed to be unlawful—either through custom, general principles of law, or through express consent. Until custom or express agreement has been reached, holding nonaggressive observational activities to be unreasonable, it will be permissible for states to employ information gathering satellites.

It has been noted that the Soviet Union and the United States have taken opposing views on the legality under international law of one function of observational satellites. However, both have fashioned their approach to this subject by reliance on, and through, seeking the benefit of the general principles of international law, the Charter of the U.N., and in particular General Assembly Resolution 1721 (XVI). Both have taken into account the concepts of sovereignty, the right to international peace and security, and self-defense. The Soviets have made particular reference to such concepts as territorial integrity, political independence, friendly international relations, and peaceful intercourse. They have also specifically noted the needs of peaceful cooperation and the humanitarian objectives of mankind. It has been suggested, in support of the Soviet position, that observational activities may constitute a form of intervention violative of an alleged right of privacy. The Soviets have charged that "espionage," at least if engaged in by means of an artificial satellite, is inherently wrong, and have sought, without success, to support their views through reference to the Hague and Chicago Con-

⁸⁵ Wright, "Espionage and the Doctrine of Non-Intervention in Internal Affairs," in Stanger, ed., *Essays on Espionage and International Law* 23 (1962). Compare, Baxter, "So-Called 'Underprivileged Belligerency'—Spies, Guerrillas, & Sabateurs," 28 *Brit. Yb. Int'l L.* 329 (1951), where it is stated that espionage "is of doubtful compatibility with the requirements of law governing peaceful intercourse of states."

ventions. They have also pointed to the fact that a state in its national legislation may prohibit the municipal crime of espionage.

The United States, on the other hand, has interpreted General Assembly Resolution 1721 as meaning that outer space is open to all for peaceful exploration and use on the basis of equality. It has pointed to the reasonableness of its observational activities and to the inconsistencies of the Soviet claim when compared with the conduct of the latter. The United States has relied on the analogy of the high seas where freedom of observation is accepted. It has noted that with the development of a customary law for outer space, state practice has generally come to regard observational activities as peaceful, and that there have been no national protests on a formal state-to-state basis against a specific instance of space observation. The United States has also been able to rely on the fact that international law—not being all-encompassing—has not arrived at any specific inhibitions against reasonable observational activities. Such activities have been held to be nonaggressive and in the greater interests of both states and mankind. On these facts it may be supposed that such observational activities will be continued since they are both lawful, nonaggressive, and generally beneficial.

D. THE SPECIAL SOVIET VIEW OF COMMUNICATIONS ACTIVITIES

The Soviet draft declaration of basic principles of April 16, 1963, provided "5. The use of outer space for propagating war, national or racial hatred or enmity between nations is inadmissible."⁸⁶ Paragraph 7 provided, in part, "All activities of any kind pertaining to the exploration and use of outer space shall be carried out solely by States."⁸⁷

The Soviet purpose here, as previously, was to provide an interpretation of the General Assembly Resolution 1721 (XVI), and to impose restrictions upon the free and peaceful use of outer space. Their underlying concern—again based on the expectation of maintaining a closed society—was that privately owned communications facilities in the western world might be used to disseminate ideas unacceptable to communist theory and practice within the Soviet Union. Thus, although the Soviet proposal expressly referred to certain kinds of propaganda, the purpose was to obtain the accept-

⁸⁶ U.N. Doc. A/AC.105/C.2/L.6, 2; U.N. Doc. A/AC.105/12 Annex I, 5. See Annex 16, *infra*, pp. 466-468.

⁸⁷ *Ibid.*

ance of a principle upon which it might be urged that information emanating from the free world might be legally excluded from the Soviet Union.

The Soviet delegate in explaining the purpose of the proposal took into account what he considered to be the undesirable phenomena resulting from private capitalist competition as well as certain achievements of modern technology. In urging against the promotion and dissemination of "inhuman ideas," he noted that the General Assembly had "envisaged that possibility in 1947, when it had adopted Resolution 110 (II) on measures to be taken against propaganda and the inciters of a new war."⁸⁸

When the committee on the Peaceful Uses of Outer Space met in September 1963, the Soviet delegate made only passing reference to the fact that his government attached "considerable importance to efforts finally to achieve agreement on the impermissibility of the use of satellites * * * for war propaganda and for propaganda connected with national and racial hatred and enmity among people."⁸⁹

The first reaction to the Soviet propaganda principle varied from the belief that it was beyond the competence of the legal subcommittee to discuss it, to the view that it went beyond international law, and also to firm support of it. As with the Soviet proposal dealing with "espionage," the states in the Communist Bloc were its supporters, while the representatives from other states expressed opinions varying from outright rejection to conditional approval. The United States, as with the proposal for prohibiting "espionage" by satellite, expressed no opinion on the subject.

At the April-May 1963, legal subcommittee meeting it was the view of the delegate of the UAR that the propaganda proposal "went beyond international law * * *"⁹⁰ The Italian delegate thought that

⁸⁸ U.N. Doc. A/AC.105/C.2/SR.17, 7 Resolution 110 (II) provided: "The General Assembly 1. *Condemns* all forms of propaganda, in whatsoever country conducted, which is either designed or likely to provoke or encourage any threat to the peace, breach of the peace, or act of aggression; 2. *Requests* the Government of each Member to take appropriate steps within its constitutional limits: (a) To promote, by all means of publicity and propaganda available to them, friendly relations among nations based upon the Purposes and Principles of the Charter; (b) To encourage the dissemination of all information designed to give expression to the undoubted desire of all peoples for peace." 1947-1948 *Yearbook of the United Nations* 93 (1949).

⁸⁹ U.N. Doc. A/AC.105/PV.20, 46. The more subdued positions of the Soviets, in contrast to that expressed in the Spring of 1963, is reflected in the Soviet delegate's statement to the committee. He observed that "Rapprochement on questions which still remain to be settled may be achieved on the basis of reasonable compromise and mutual concessions." *Ibid.*

⁹⁰ U.N. Doc. A/AC.105/C.2/SR.18, 4.

the proposal went beyond the competence of the body and that the injection of it would only lead to a conflict of opinion which might limit affirmative progress in other areas. He observed that "Although it was true that the problem of propaganda was related to the use of outer space because a space-ship might be equipped with transmitting gear, the legal aspects of propaganda would not differ if the transmission was received from a radio located on earth or conveyed through a space-ship. The origin of the transmission was not the point at issue."⁹¹ This view was supported by France,⁹² Australia,⁹³ Argentina,⁹⁴ and the United Kingdom.⁹⁵

Canada and Brazil suggested alternative proposals. The Canadian delegate suggested a principle formulated in positive terms, namely: "States shall endeavor to direct their activities in outer space towards the maintenance of international peace and security and the achievement of international co-operation and understanding."⁹⁶ Brazil favored a specific agreement, in accordance with the principles of the Charter, which "should prohibit any State from using global telecommunications systems to intervene in the domestic affairs of another State."⁹⁷ The United States simply adhered to its view that international law was applicable to outer space activities.⁹⁸

On the other hand, the western bloc countries did not favor the use of outer space as a forum for the dissemination of war propaganda and incitement to national or racial hatred and discrimination. If, as they agreed, the principles and rules of international law which applied elsewhere also applied in outer space, there was no reason to restate acknowledged limitations.⁹⁹

The countries favoring the Soviet proposal urged the need for a more positive inhibition upon the uses of outer space. This was the view of Czechoslovakia,¹⁰⁰ and Hungary,¹⁰¹ which specifically charged that "The conduct of space activities, in any form, by private persons or organizations was therefore inconsistent with the principles of

⁹¹ U.N. Doc. A/AC.105/C.2/SR.20, 3.

⁹² U.N. Doc. A/AC.105/C.2/SR.22, 14. It opposed a state monopoly.

⁹³ U.N. Doc. A/AC.105/C.2/SR.23, 6.

⁹⁴ U.N. Doc. A/AC.105/C.2/SR.24, 10.

⁹⁵ *Ibid.*, 12.

⁹⁶ U.N. Doc. A/AC.105/C.2/SR.21, 7. The British representative noted that this was an interesting proposal.

⁹⁷ U.N. Doc. A/AC.105/C.2/SR.24, 7.

⁹⁸ U.N. Doc. A/AC.105/C.2/SR.28, 9.

⁹⁹ This was also the view of this Polish representative. U.N. Doc. A/AC.105/C.2/SR.19, 7.

¹⁰⁰ U.N. Doc. A/AC.105/C.2/SR.20, 8.

¹⁰¹ U.N. Doc. A/AC.105/C.2/SR.26, 4.

international law * * *,”¹⁰² and Bulgaria which supported the Soviet proposal on the ground that it was humanitarian.¹⁰³ Albania maintained that the acceptance of the principle would lead to the conclusion of detailed agreements on such specific subjects as assistance to astronauts in distress and liability for damage.¹⁰⁴ Romania upheld the Soviet proposal on the ground that it would help to encourage constructive international cooperation.¹⁰⁵ These debates resulted in the incorporation of the following language into the unanimous General Assembly Resolution 1962 (XVIII) of December 24, 1963: “Resolution 110 (II) of 3 November 1947, which condemned propaganda designed or likely to provoke or encourage any threat to the peace, breach of the peace, or act of aggression, and considering that the aforementioned resolution is applicable to outer space. * * * ”^{105a} Presumably such language has given to the Soviets one additional assurance that outer space is to be used for peaceful, i.e., nonaggressive and beneficial, purposes.

As the subcommittee concluded its April-May 1963 meetings, the representative of the United States stated that if that body were to succeed in bringing forth acceptable recommendations, its members would have to be motivated to “engage in the give and take of international discourse and to make adjustments in their positions in order to achieve a consensus.”¹⁰⁶ Concerning the means by which ideas might be disseminated, the answer of the Soviet representative was that “Only States fully cognizant of their responsibilities should be allowed to engage in space activities: to give private companies a free hand in outer space could lead to chaos and anarchy.”¹⁰⁷

However, by September 1963, the Soviet Union had modified considerably its views that only national bodies might embark on outer space programs. Thus, the Soviet representative told the Committee on Peaceful Uses of Outer Space that it would be willing to recognize the responsibility of international organizations for material damage caused by them during their space activities. He noted that “in the case of space activity being conducted by an international organization, responsibility for both the implementation of the principles of the declaration and for possible material damage caused on

¹⁰² U.N. Doc. A/AC.105/C.2/SR.21, 4.

¹⁰³ U.N. Doc. A/AC.105/C.2/SR.23, 8.

¹⁰⁴ U.N. Doc. A/AC.105/C.2/SR.24, 3.

¹⁰⁵ U.N. Doc. A/AC.105/C.2/SR.26, 7.

^{105a} See Annex 4, *infra*, pp. 450-452.

¹⁰⁶ U.N. Doc. A/AC.105/C.2/SR.28, 9.

¹⁰⁷ *Ibid.*, 13.

the earth or in space, will be borne, together with the international organization also by States participants in it.”¹⁰⁸

Several days later the Soviets also acknowledged the permissibility of private companies engaging in space activities when supervised or controlled by their national governments. The Soviet delegate stated that “it would be possible to consider the question of not excluding from the [Soviet] declaration [of principles] the possibility of activity in outer space by private companies, on the condition that such activity would be subject to the control of the appropriate State, and the State would bear international responsibility for it.”¹⁰⁹ These more recent views of the Soviets indicate some elasticity in their conception of a suitable declaration of principles for national activity in outer space. This elasticity was reflected in the terms of the unanimously adopted United Nations General Assembly Resolution 1962 (XVIII) of December 24, 1963. It made provision for conducting space activities by both governmental agencies and nongovernmental entities and stated in paragraph five that “the activities of nongovernmental entities in outer space shall require authorization and continuing supervision by the State concerned.”

The foregoing analysis of some of the conditions under which outer space may be used has demonstrated a number of salient positions. It has called attention to the need for an interpretation of the basic principles contained in General Assembly Resolution 1721 (XVI) of December 20, 1961. It has also served to illustrate the problem of moving in the direction of agreement on specific rules. The basic problem, of course, is and will continue to be the extent to which the uses of outer space will be free or limited. This directly affects the substance of reasonable uses and unreasonable or unpermitted uses. The Soviet Union, and the Communist Bloc, have demonstrated their demands for a limitation on the free uses of outer space—going beyond the bounds of practical reasonableness in the eyes of the western world. The negative approach was best illustrated by the statement of the Soviet delegate to the legal subcommittee on May 2, 1963. After charging that the United States had refused to support “the principle of equal rights for all States in the exploration and use of outer space,”¹¹⁰ although the representative of the United States had previously made it clear that a consensus existed on the principle of “the equality of rights of all States in the exploration

¹⁰⁸ U.N. Doc. A/AC.105/PV.20, 42.

¹⁰⁹ U.N. Doc. A/AC.105/PV.22, 37. United States private satellite operations are discussed in 1 *Astronautics and Aerospace Engineering* 23-52 (September 1963).

¹¹⁰ U.N. Doc. A/AC.105/C.2/SR.27, 6.

and use of outer space" ¹¹¹ in accordance with international law, the Soviet delegate concluded: "Nor unfortunately had there been agreement on the principle of the freedom of outer space, since difference of opinion existed as to whether that freedom should be absolute or qualified." ¹¹² Despite the unacceptability of the Soviet proposals relating to the collection of intelligence data by observational satellite and those relating to limitations upon the substance and means for the dissemination of ideas, there was a strong feeling among the members of the subcommittee that certain uses of outer space were unreasonable and therefore impermissible. Such uses have been characterized as nonpeaceful, i.e., aggressive and nonbeneficial.

E. RESTRICTIONS ON USES OF OUTER SPACE

The range of reasonableness, and therefore of permissibility, extends from such generally accepted practices as the collection of scientific information by satellite through the practice of collecting intelligence data in the territory of a state to the unreasonable, and hence impermissible, use of outer space and space vehicles for aggressive purposes. The United States has adopted the policy of not placing weapons possessing mass destruction capabilities in outer space and as early as the 1962 debates in the Political Committee of the United Nations, invited the Soviet United to conform to the same policy.¹¹³ Efforts to obtain an understanding with the Soviets respecting the presence of weapons of mass destruction stationed in outer space have been influenced by common efforts to interdict, as unreasonable, the testing of nuclear weapons in outer space.

On April 18, 1962, the United States submitted a draft treaty on General and Complete Disarmament to nations endeavoring to reach an accord on this subject. The American draft provided in part D for Stage One that "The Parties to the Treaty would agree not to place in orbit weapons capable of producing mass destruction."¹¹⁴ Article 15 of the Soviet proposal of March 28, 1962, for "General and Complete Disarmament under Strict International Control" provided that "Rockets and space devices shall be launched exclusively for peaceful purposes," and called for control teams from an international agency to be present "at launchings and thoroughly examine

¹¹¹ *Ibid.*

¹¹² *Ibid.*

¹¹³ Senator Albert C. Gore, December 3, 1962. *U.N. Doc. A/C.1/PV.1289*, 16. Compare, Meeker, "Observation in Space," *Department of State Press Release No. 191 (Revised)*, April 12, 1963, 6.

¹¹⁴ 46 *Department of State Bulletin* 747 (1962); 56 *A.J.I.L.* 906 (1962).

every rocket or satellite before launching.”¹¹⁵ And, prior to the Soviet proposal, the United States on September 25, 1961, had submitted a plan for general and complete disarmament to the United Nations. In Stage I the proposal called for the prohibition of “the placing into orbit or stationing in outer space of weapons capable of producing mass destruction * * * ”¹¹⁶ The same proposal also called for states to give advance notification to participating states and to the International Disarmament Organization of “launchings of space vehicles and missiles, together with the track of the vehicle.”¹¹⁷

President Kennedy called attention to the American position on September 12, 1962, when he stated that “We have vowed that we shall not see space filled with weapons of mass destruction, but with instruments of knowledge and understanding.”¹¹⁸ Pursuing this goal, and immensely assisted by the conclusion of the Moscow Treaty “banning nuclear weapon tests in the atmosphere, in outer space and under-water,”¹¹⁹ August 1963, Mr. Kennedy in addressing the United Nations on September 12, 1963, again laid emphasis on the need to keep weapons of mass destruction out of outer space. As the 18-member United Nations Disarmament Committee began to turn its attention to drafting a resolution on this subject in October 1963, Mr. Kennedy again made the position of the United States clear when he stated on October 9, 1963, that “The United States has stated it would not put weapons in outer space. We have no military use for doing so and we would not do so.”¹²⁰ It should also be noted that the Soviet Foreign Minister had placed some emphasis on the

¹¹⁵ *New Times*, No. 13, March 28, 1962; 56 *A.J.I.L.* 934 (1962).

¹¹⁶ U.N. Doc. A/4891; 45 *Department of State Bulletin* 652 (1961).

¹¹⁷ *Ibid.*

¹¹⁸ *New York Times*, September 13, 1962.

¹¹⁹ The operative parts of the Treaty are contained in Article I, which in part provided: “1. Each of the Parties to this Treaty undertakes to prohibit, to prevent, and not to carry out any nuclear weapon test explosion, or any other nuclear explosion, at any place under its jurisdiction or control: (a) in the atmosphere; beyond its limits, including outer space; or underwater, including territorial waters or high seas; or (b) in any other environment if such explosion causes radioactive debris to be present outside the territorial limits of the State under whose jurisdiction or control such explosion is conducted. * * * 2. Each of the Parties to this Treaty undertakes furthermore to refrain from causing, encouraging, or in any way participating in, the carrying out of any nuclear weapon test explosion, or any other nuclear explosion, anywhere which would take place in any of the environments described, or have the effect referred to, in paragraph 1 of this Article.” 49 *Department of State Bulletin* 239 (1963). The Treaty is set forth in Annex 19, *infra*, pp. 470-472.

¹²⁰ *New York Times*, October 10, 1963.

need to avoid positioning weapons of mass destruction in outer space in his September 1963, address to the United Nations.

Prior to the unanimous adoption by the Political Committee of the United Nations on October 16, 1963, and the subsequent unanimous adoption of Resolution 1884 (XVIII) by the General Assembly on October 17, 1963,¹²¹ there had been discussions in the legal subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space on the need to avoid the positioning of such weapons in outer space. These discussions were carried on in the context of formally interdicting nonpeaceful, i.e., aggressive and nonbeneficial, uses of outer space. Thus, during the discussions carried out in the legal subcommittee in the Spring of 1963, the representative of the United Arab Republic indicated that peaceful uses would prohibit "the storage of weapons of mass destruction in artificial satellites circling the earth, the placing of missiles on the moon or the establishment of military bases in outer space or on celestial bodies."¹²²

Among the uses of outer space which are currently under discussion, particularly in terms of the reasonableness of the use, are the West Ford projects of the United States. The second effort in 1963 succeeded in distributing a vast quantity of copper needles in a circular orbit around the earth at an elevation of approximately 2,000 miles. Such needles serve to transmit radio signals carrying voice, teletype, and high speed data. They have been designed to provide an invulnerable communications system which would be almost impervious even to nuclear explosions.

The use of outer space as a dimension for the testing of nuclear devices has also been much debated in terms of reasonableness and hence permissibility. In all pre-Moscow treaty discussions the problem of occasional—as opposed to frequent or continual—use had been raised, and it has been urged that an occasional use of an otherwise unpermitted form of conduct could fall within the range of reasonableness.¹²³ Many factors, of course, have to be weighed in arriving at a conclusion as to the reasonableness, and hence permissible status, of such uses.¹²⁴

¹²¹ *Supra*, p. 264–268. Annex 13, *infra*. pp. 462–463.

¹²² U.N. Doc. A/AC.105/C.2/SR.18, 4.

¹²³ McDougal and Schlei, "The Hydrogen Bomb Test in Perspective, Lawful Measures for Security," 64 *Yale Law Journal* 648 (1955). Compare, Margolis, "The Hydrogen Bomb Experiments and International Law," 64 *Yale Law Journal* 629 (1955).

¹²⁴ *Infra*, pp. 332–349. It is clear that a unilateral breach of the terms of the Moscow Treaty would absolve other signatories from the further obligation to conform to it.

In seeking a policy as to the type of restrictions which ought to be imposed with respect to the uses of outer space, the United States has been guided by man's vast experience in the use of the seas. The law of outer space, by way of partial analogy with the law of the high seas, has adopted the principle that such space is free for peaceful and reasonable uses. The United States has supported this result on the ground that it permits the use of outer space free of any restraints except those of exclusive use and illegal activity, such as aggression. This position was stated in large part by the Deputy Assistant Secretary of State for International Organizational Affairs on March 12, 1962, when, in referring to General Assembly Resolution 1721 (XVI), he stated that "Mankind would thus be free to use space on the same basis as it uses the high seas—free of any restraint except those on illegal activity, such as aggression and exclusive use. This formula is designed to promote the maximum exploitation of space technology in the service of human needs."¹²⁵ Thus, the purpose underlying the use of outer space has a direct bearing on whether such uses or activities in outer space are to be considered peaceful, reasonable, and lawful. The practical consequences of certain uses will prove whether space activities serve human needs.

One of the most important considerations to be weighed in ascertaining the reasonableness of space conduct is whether it is carried on openly after suitable advance notice to the world. President Kennedy, in addressing the National Academy of Sciences on October 22, 1963, announced a policy for the conducting of outer space experiments involving potential risk to the space environment. Apparently with the West Ford project and perhaps high-altitude nuclear tests conducted in the Pacific in mind he stated:

The government has the clear responsibility to weigh the importance of large-scale experiments to the advance of knowledge or to national security against the possibility of adverse and destructive effects. * * *

To deal with this problem, we have worked out formal procedures within the government to assure expert review before potentially risky experiments are undertaken.

And we will make every effort to publish the data needed to

¹²⁵ Gardner, "Extending Law into Outer Space," *Department of State Press Release*, No. 159, March 10, 1962; 56 A.J.I.L. 798-799 (1962). Compare Gardner, "Cooperation in Outer Space," 41 *Foreign Affairs* 345 (1963); see also Gardner, "Outer Space: A Breakthrough for International Law," 50 A.B.A.J. 30-33 (January 1964).

permit open discussion of proposed experiments by the scientific community before they are authorized.¹²⁶

From these remarks it is clear that the United States proposes to publish the reasons for large-scale scientific experiments in outer space before they are finally authorized. This will permit open examination and discussion of the proposed activities. However, the President's remarks left open the possibility that such procedures were not necessarily to be exclusive, and that in reality such procedures would not be followed if the intended experiment involved measures of significant importance to national security. To the extent that the world scientific community will be consulted prior to embarking upon new and different experiments, it is indeed likely that the body of scientific opinion comprising COSPAR will be taken into careful account. In the formulation of this policy it is also clear that the United States has opened the way for other nations to conform to comparable practices. The establishment of an international scientific consensus as to appropriate scientific practices will unquestionably materially affect the substance of reasonable uses.

In view of the fact it is difficult to identify the functions of aircraft and spacecraft after they have left the ground, one approach to the peacefulness or reasonableness of their missions has been to suggest the development of registration and inspection procedures for use prior to launch and flight.¹²⁷ The difficulty of ascertaining the intended purposes of space vehicles, after launch, may be compared with the problem of determining the mission of aircraft while in flight. This is particularly true when international tension is high. During the 1962 Cuban crisis between the United States and the Soviet Union, Mr. Khrushchev wrote to President Kennedy with regard to an American reconnaissance plane which appeared over the Chukotka Peninsula on October 28: "Is it not a fact that an intrud-

¹²⁶ *New York Times*, October 23, 1963; *Christian Science Monitor*, October 24, 1963. The American position that the West Ford experiment was "planned to avoid interference with other space activities and other scientific pursuits" was set forth in a communication by Ambassador Stevenson to the Secretary General of the U.N. on June 6, 1963. "United States Space Communications Experiment," *United States Mission to the United Nations Press Release No. 4219, 1* (June 6, 1963).

¹²⁷ The problem of arriving at information concerning nuclear test explosions is not entirely dissimilar. In this connection there has been agreement in principle between the United States and the Soviet Union that on-site inspections, both by means of automatic seismic stations and human inspection, should take place. See the exchange of letters of December 19 and 28, 1962, and of January 7, 1963. "U.S. and U.S.S.R. Exchange Views on Nuclear Test Ban," 48 *Department of State Bulletin* 198-202 (1963).

ing American plane can be easily taken for a nuclear bomber and this might push us to a fateful step * * * ?" ¹²⁸

1. Preliminary Assessment of Factors to be Considered in Determining Whether Outer Space Is Being Used for Reasonable Purposes

Reasonableness of use in the final analysis must depend on at least three considerations, namely, the purpose or intent underlying the use of the space vehicle, the specific factual context of a given international situation, and finally, the nature—including specific capabilities—of the vehicle itself. In some instances the very nature of the vehicle, when, for example, it is an instrument of mass destruction, would characterize its presence in outer space as an unreasonable one. In other instances, intent would have to be linked to the inherent capability of the vehicle in order to determine if it were to be employed for overtly aggressive purposes. In such situations the nature of existing international relationships would have to be taken into account in arriving at a decision as to the reasonableness of space conduct.

The presence of a weapon of mass destruction in outer space may be considered to be both unreasonable and unlawful as well as being destructive of the expectations relating to the peaceful uses of outer space. The fact that the major resource states have abstained from the positioning of such a weapon in outer space suggests that there is an awareness that such an act would be considered by the other as an unpeaceful or aggressive one. Greater certainty would be achieved through the acceptance of an express and formal agreement not to place such weapons in outer space. However, such agreements would serve only as express promulgations of ongoing practices conceived to be in the respective mutual interests of the resource states. If it

¹²⁸ Text of Message, *New York Times*, October 29, 1962. Jenks, in 1960, noted that "mutual protection against surprise attack is the key to making effective the exclusive dedication of space to peaceful purposes; the chief danger of activities in space unleashing war on earth may well lie in some inoffensive space vehicle being mistaken in a radar screen at a moment of heightened international tension for an inter-continental ballistic missile which has been launched for a military purpose. Advance notification of launching sites and firing schedules, the filing of flight plans and of descriptions of weight, load and size, and the use of agreed radio codes for the reception of data from space can all play a significant part in eliminating the military element." Jenks, "The International Control of Outer Space," *Third Colloquium* 10 (1961); *Legal Problems of Space Exploration, A Symposium* 743; Compare, McDougal, "Artificial Satellites: A Modest Proposal," 51 *A.J.I.L.* 74-77 (1957).

may be agreed that the presence of instruments of mass destruction in outer space could serve no peaceful purpose, then the illegality of placing such space vehicles in outer space is supported by General Assembly Resolutions 1721 (XVI), 1802 (XVII), 1884 (XVII), and 1962 (XVIII).

2. Prelaunch Factors Affecting Reasonableness of Uses

a. Verification and Inspection

National intent to employ outer space for unreasonable uses may be determined in two ways. First, there may be an explicit claim to engage in an unreasonable use. Second, in the absence of such an explicit claim, and even in the presence of an explicit disclaimer that such activity was not unreasonable, a state through its conduct might engage in unreasonable space activities.

In order to arrive at international assurance that launched space vehicles are not carriers of instruments of mass destruction, and to provide evidence respecting the claim that other space vehicles are designed and intended for reasonable, peaceful, and legal uses, it has often been suggested that such space vehicles and their activities be made the subject of verification and inspection.

Such verification and inspection may take two forms. The first would consist of suitable examination prior to launch. The second, and less effective and less likely to provide an ordered structure for space activity, would be verification and inspection after launch. Prelaunch verification and inspection will be considered here. Postlaunch problems will be discussed in the following chapter.

Proposals for some form of prelaunch inspection, either by non-nationals or by an international agency, have long been advocated. One of the first was that of McDougal, who prior to the IGY and the first Sputnik, urged that each state about to launch a satellite should "register its intent to do so with an international agency, to file a flight plan with such agency, and to file a description of the satellite's load, weight, size, etc. It would of course be impractical and not necessary to the proposal to include details of the launching mechanism, but complete information about the load could be registered and this could be done with respect to both recoverable and nonrecoverable satellites. Beyond registration it might even be desirable as a guarantee of good faith to suggest inspection by the international agency to assure that the load conforms to the description filed. A procedure of inspection need not, of course, include submission to prior approval."¹²⁹

¹²⁹ McDougal, *ibid.*, 77.

The U.N. Ad Hoc Committee on the Peaceful Uses of Outer Space, in its report of July 14, 1959, noted as a matter of priority the need for the identification and registration of space vehicles and co-ordination of launchings.¹³⁰ The report suggested the "necessity of providing suitable means for identifying individual space vehicles," and added that such "identification of space vehicles could be obtained by agreement on an allocation of individual call-signs to these vehicles; the call-signs could be emitted at stipulated regular intervals, at least until identification by other means had been established. Another means of identification is by orbital or transit characteristics of space vehicles."¹³¹ The report, in addition to favoring registration, also noted the importance of identification. It stated "Registration might also afford a convenient means for the notification of launchings to other States, thus enabling them to make appropriate distinctions between the space vehicles so notified and other objects, and to take appropriate measures to protect their interests if necessary."¹³²

The American Bar Association's Committee on Law of Outer Space, 1959, noted the importance of "nothing less than foolproof international inspection and enforceable regulation of atomic activities * * *" if there were to be adequate conformity with the needs of peace and security and the right of self-defense.¹³³ On this basis the Committee recommended that there be developed an "appropriate inspection and control system" for space activities.¹³⁴ The need for such a system was based not only on security considerations, but was also related to an orderly peaceful use of space. The latter would, of course, be maximized through the "advance filing of flight plans and coordination of launch times."¹³⁵

The merit of establishing prelaunch inspection and identification procedures has also been justified in practical terms. It is probable at this time that a more meaningful inspection would be accomplished on the ground than after the vehicle had been placed in orbit. However, the former approach has been resisted by states, particularly the Soviet Union, on the basis that it might carry with it collateral

¹³⁰ U.N. Doc. A4141; *Legal Problems of Space Exploration, A Symposium*, 1269.

¹³¹ *Ibid.*

¹³² *Ibid.*

¹³³ "Report of the Committee on Law of Outer Space—Recommendations: 1959," *Legal Problems of Space Exploration, A Symposium* 575.

¹³⁴ *Ibid.*, 576.

¹³⁵ Lipson & Katzenbach, "The Law of Outer Space" (1960), in *Legal Problems of Space Exploration, A Symposium* 815.

reconnaissance of launching sites and attendant espionage. It has been pointed out that "With the possible exception of inspecting vehicles at launching sites, inspection in outer space may be less of an invasion of privacy or of national sovereignty than inspection of weapons on the ground."¹³⁶ Sovereignty does not extend to outer space.

The serious difficulties attendant upon the verification and inspection of nuclear tests conducted by one state are similar to the problems involved in the launching of space vehicles. Thus, for reasons of sovereignty, security and self-defense, seasoned by the Soviet's large passion for secrecy, it has not been possible to arrive at a process for prelaunch inspection and identification of artificial satellites. It may be suggested, however, that an international agreement requiring international inspection and identification prior to launch would serve many useful purposes. In the first place, such inspection and identification process would quickly ascertain whether the space vehicle were equipped with instruments of mass destruction, and might either forestall the launch or publicize the nature and legality of the satellite. Secondly, by imposing a duty to submit to prelaunch inspection and identification, it would be possible to establish a presumption that vehicles in orbit which had not been inspected and identified prior to launch were being employed for an unreasonable and nonpeaceful purpose. Thirdly, the prelaunch inspection and identification would grant to the launching state the right to contend that the launch was both reasonable and peaceful and thus shift the burden of proof to show the contrary upon those seeking to prove that the use was unreasonable and nonpeaceful. In short, prelaunch inspection and registration would permit the establishment of a *prima facie* case that the launch was both reasonable and peaceful, and, therefore, legal. Space vehicles in orbit, which could not offer evidence of prelaunch inspection and registration, on the other hand, would presumably be designed for unreasonable and nonpeaceful purposes, and states offended by their presence would be entitled to exercise legal rights to achieve and maintain international peace, security, and self-defense.¹³⁷

Although it might be supposed that a system of prelaunch inspection and registration, particularly when conducted by a suitable international organization, might have much to commend it, there was

¹³⁶ Schelling, "The Military Use of Outer Space, with Particular Reference to Bombardment Satellites," in Goldsen, ed., *Outer Space* 44 (1960).

¹³⁷ *Infra*, pp. 319-331.

no possibility of writing such a provision into General Assembly Resolution 1721 (XVI). However, Part B of that Resolution did contain a provision calling upon states, in order to further the peaceful exploration and use of outer space, to submit information on national launches on a voluntary basis. The Resolution called upon states "launching objects into orbit or beyond to furnish information promptly to the Committee on the Peaceful Uses of Outer Space, through the Secretary-General, for the registration of launchings."¹³⁸ The Resolution also called upon the Secretary-General to maintain a public registry of the information furnished by member states. This function is being performed by the Secretary-General who after receipt of reports from the United States and the Soviet Union publishes and distributes the data received.¹³⁹

The United States has reported vehicles launched into orbit or beyond under the following headings: international designation, launch vehicle, satellite category, date of launch, nodal period, inclination, apogee and perigee in kilometres. It has also furnished supplemental information relating to vehicles which did not achieve orbit or those which no longer remain in orbit. United States satellite categories have been designated as "A" for development of space flight techniques and technology, "B" for space research and exploration, "C" for practical applications of space based technology, and "D" for nonfunctional objects.

The Soviet Union has made reports concerning launchings of artificial earth satellites and space objects. It has assigned to them serial numbers, names, the purpose of launching, date of launch, perigee, apogee and inclination of orbit. Typical purposes assigned to launches have been the investigation of the upper atmosphere and outer space, physical study of the atmosphere, research in upper atmosphere and in outer space, attainment of escape velocity and exploration of interplanetary space, and medical and biological research under space flight conditions. It is possible that these respective reports constitute opposing claims as to the presence of atmosphere and the existence of a line or lines separating airspace from outer space. Thus, using for illustrative purposes the satellites which have maintained effective perigees at about 100 statute miles—the lowest reported at the time of this writing—the United States has described such space flights as Category A, namely development of

¹³⁸ U.N. Doc. A/5100. *Infra*, pp. 443-446.

¹³⁹ These appear as U.N. Doc. A/AC.105/INF.1. *et seq.* The United States and the Soviet Union have filed reports periodically since March 7, 1962.

space flight techniques and technology.¹⁴⁰ However, the first manned space flight undertaken by the United States, Mercury-Atlas 6 (1962 Gamma) of February 20, 1962, was described by the United States as one "launched into earth orbit" and "after four hours and 43 minutes the spacecraft re-entered the atmosphere and landed * * *"¹⁴¹

The Soviet reports to the United Nations on manned space flights, Vostok 1 through 4, have been described as spaceship satellites, and the purpose of the launch has been described in scientific terms, such as human functioning under conditions of weightlessness, conduct of scientific observations, and improvement of functional systems.¹⁴² On the other hand, Soviet space vehicles, described by them as "satellites," or "sputniks" of the Cosmos variety, have maintained perigees varying from about 110 to 168 statute miles. Soviet reports to the United Nations have consistently described the purposes of these launchings to be "investigation of the upper atmosphere and outer space."¹⁴³ The Soviets have not, however, urged on the basis of this language that in a legal sense there is a boundary between airspace and outer space at such heights. It may be noted, also, that there is a belief that the Cosmos type satellite may be earth, as well as space, oriented in its observational capabilities.¹⁴⁴

b. Exchange of Information Relating to Outer Space Activities

Resolution 1721 B (XVI) also requires a close coordination between the U.N. and governmental and nongovernmental organizations concerned with outer space matters. To the end that there might be every encouragement to international cooperation in the peaceful exploration and use of outer space, the Resolution made provision for the "exchange of such information relating to outer space activities as Governments may supply on a voluntary basis, supplementing but not duplicating existing technical and scientific exchanges."¹⁴⁵ States have regularly submitted such reports, and the materials have been widely distributed. General Assembly Resolution 1802 II (XVII) of December 19, 1962, has taken into account the

¹⁴⁰ This was true for the manned Mercury-Atlas 7 (1962 Tau 1) flight on May 24, 1962, the manned Mercury-Atlas 8 (1962 Beta Delta 1) flight on October 3, 1962, and the manned Mercury-Atlas 9 (1963 15A) on May 15, 1963. *U.N. Doc. A/AC.105/INF.10*; *U.N. Doc. A/AC.105/INF.21*; *U.N. Doc. A/AC.105/INF.40*.

¹⁴¹ *U.N. Doc. A/AC.105/INF.3*, 4.

¹⁴² *U.N. Doc. A/AC.105/INF.2*, 7; *U.N. Doc. A/AC.105/INF.18*, 2.

¹⁴³ *U.N. Doc. A/AC.105/INF.18*, 3; *U.N. Doc. A/AC.105/INF.36*, 2.

¹⁴⁴ *The New York Times*, May 27, 1963.

¹⁴⁵ *U.N. Doc. A/5100*. The Secretary-General of the U.N. has reported regularly on the received data. *U.N. Docs. A/5109*, *A/5201/Add.1* 2, *A/AC.105/11/Add.1* to *Add.3*.

receipt of such data from many states and expressed the view that other states and regional and international organizations having space programs should furnish the U.N. with such information.¹⁴⁶ Such reports contain descriptions of national space programs and provide numerous examples of reasonable, peaceful and legal uses of outer space. The examples deal almost exclusively with scientific investigations being conducted in outer space.

A Soviet commentator has emphasized the fact that Resolution 1721 B (XVI) is not mandatory and that it deals only with the reporting of postlaunch data. In noting that Part B of the Resolution refers to the need for prompt reporting of launches, Korovin has concluded that this "means subsequent and not advance registration; nor does the article specify the scope of information to be submitted on registration, which is determined by the state voluntarily making the registration."¹⁴⁷ The need to provide an orderly regime for the peaceful use of outer space has been considered by many commentators. The following is a representative opinion:

As satellite traffic increases, it will be necessary to arrive at juridico-technical agreements for the creation of a central registration and data processing agency. This will also permit the establishment of the orbital elements which, in turn, will assist in identifying individual satellites.

Without precise legal stipulations providing in advance of launching for full information about such items as the nationality of all space vehicles, their anticipated launching dates and orbital paths, their radio codes for transmission and reception of data, their agreed upon equipment and instrumentation, and certain 'markings' permitting identification of space vehicles in orbit and after re-entry, the risk of miscalculation and ensuing human disaster will soon be real.¹⁴⁸

The Japanese representative to the legal subcommittee of the Committee on the Peaceful Uses of Outer Space has suggested that a non-launching state need not be obliged to return a space vehicle or its parts unless it had been provided with advance information concerning the vehicles in transit or in orbit. He stated that "The obligation of non-launching States to return space vehicles should be conditioned upon the obligation of launching States to provide adequate information in advance. The information might be supplied

¹⁴⁶ U.N. Doc. A/RES/1802 XVII). Annex 3, *infra*, pp. 446-450.

¹⁴⁷ Korovin, "Peaceful Cooperation in Space," *International Affairs (Moscow)* 63 (March 1962).

¹⁴⁸ Schick, "Space Law and National Security," *International Affairs (Moscow)* 58 (March 1962).

through bilateral channels or by other appropriate means. In that connection, the timing and contents of the information provided under the registration system established by General Assembly Resolution 1721 B (XVI) might be improved.”¹⁴⁹

c. *National Consultation and Cooperation as to Purportedly Undesirable Space Uses*

In keeping with the premise contained in Resolutions 1721 (XVI), 1802 (XVII), and 1962 (XVIII) that international cooperation should play a large role in the peaceful use and exploration of outer space, several states have made proposals for consultation and co-ordination regarding national space programs so that space would not be used for unreasonable purposes. Such suggestions have been advanced to ameliorate the situation created by failure to reach agreement on prelaunch inspection and registration. Thus, the 1963 Soviet Draft Declaration of the Basic Principles Governing the Activities of States in the Exploration and Use of Outer Space, Paragraph 6, called for:

Co-operation and mutual assistance in the conquest of outer space shall be a duty incumbent upon all States; any measures that might in any way hinder the exploration or use of outer space for peaceful purposes by other countries may be implemented only after prior discussion of and agreement upon such measures between the countries concerned.¹⁵⁰

The Soviet representative to the legal subcommittee introduced his remarks on Paragraph 6 by stating that the entire Soviet draft reflected a number of views contained in the 1962 Draft Declaration of Principles Relating to the Exploration and Use of Outer Space previously submitted by the United States.¹⁵¹ He made specific reference to such principles as “the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes, the use of such exploration for the betterment of mankind and of States, irrespective of their degree of economic or scientific development, and the role of co-operation in the use of outer space in the development of mutual understanding and the strengthening of friendly relations between nations and peoples.”¹⁵²

¹⁴⁹ U.N. Doc. A/AC.105/C.2/SR.22, 12.

¹⁵⁰ U.N. Doc. A/AC.105/C.2/L.6, 2; U.N. Doc. A/AC.105/12, Annex I.

¹⁵¹ U.N. Doc. A/AC.105/12, Annex I 9-10. U.N. Doc. A/C.1/881. Annex 10, *infra*, pp. 459-460.

¹⁵² U.N. Doc. A/AC.105/C.2/SR.17, 6. These views are contained in the preamble to the United States draft. See U.N. Doc. A/C.1/881. Annex 10, *infra*, pp. 459-460.

The Soviet delegate noted that his country's draft¹⁵³ proclaimed extensive rights for peaceful activities in outer space, but that there was a need to protect states and the international community as a whole against the abuse of such rights. He stated: "The idea of the free access of all States to outer space did not mean that States were free to engage in measures which might hinder other countries in their exploration or use of outer space for peaceful purposes. Outer space might be used for undesirable purposes and Paragraph 6 of the Soviet draft therefore mentioned the principle of prior discussion and agreement between the countries concerned."¹⁵⁴ He then referred to the role of COSPAR and the work of a subcommittee of the Inter-Parliamentary Union, and in particular to his country's concern lest experiments in outer space produce harmful effects and thereby interfere with the peaceful use of space.¹⁵⁵

The Soviet delegate supported his views by referring to the 1962 Draft Declaration of Basic Principles Governing the Activities of States Pertaining to the Exploration and Use of Outer Space of the United Kingdom, which had been previously circulated to the members of the committee.¹⁵⁶ Paragraph 1 of the British draft after noting the principle that "Outer Space and celestial bodies are free for exploration and use by all States in conformity with international law"¹⁵⁷ proceeded to enumerate four specific instances of the peaceful and reasonable use of such areas. The draft included within this category the provision:

This freedom shall include free navigation by means of space vehicles, the establishment of space stations and other like devices, the conduct of scientific research, and the landing on and exploration of celestial bodies, and shall be exercised by all States with due regard to the interests of other States in the exploration and use of outer space, and to the need for *consultation and co-operation* between States in relation to such exploration and use.¹⁵⁸

It has always been difficult to derive acceptable operational rules and procedures from commonly accepted principles. With regard to outer space no disagreement has existed respecting the needs to use outer space for peaceful and beneficial purposes. Neither has there been much doubt as to the need to achieve international cooperation so that national benefits and interests might be maximized. There

¹⁵³ Annex 10, *infra*, pp. 459-460.

¹⁵⁴ U.N. Doc. A/AC.105/C.2/SR.17, 6.

¹⁵⁵ *Ibid.*

¹⁵⁶ U.N. Doc. A/C.1/879; U.N. Doc. A/AC.105/12, Annex I 8. Annex 18, *infra*, pp. 469-470.

¹⁵⁷ *Ibid.*

¹⁵⁸ *Ibid.* Italics added.

has been general agreement that nonpeaceful, i.e., aggressive, uses of outer space were not permissible. But there has existed disagreement as to the procedures which would best contribute to the realization of the desired goals. Specifically, by the end of 1964 there was no precise agreement as to how possible future abuses of the peaceful use of outer space could be controlled. The Soviet proposal called for prior discussion and agreement respecting possible misuses of outer space. The British draft called for consultation and cooperation on the part of resource states prior to engaging in launches which might be detrimental to the benefits and interests of mankind. Although the British proposal gathered more support than did that of the Soviets, neither procedure has become mandatory.

The representative of the United States in 1963, noted that there had been a narrowing of differences and a clarification of viewpoints. He cited the fact that the United States, along with other states, had "endorsed the idea of appropriate international consultation on problems of interference and contamination in outer space and of providing for discussion of particular proposed projects."¹⁵⁹ In view of the continual United States support for the principle that "exploration and use of space should be carried out for the benefit and in the interest of all mankind * * *"¹⁶⁰ it recognized the need "for consultation and co-operation between States * * *" to avoid harmful conduct in outer space.¹⁶¹ In this connection it was recalled that COSPAR in April 1962, had created a consultative group "to study the problem of harmful experiments in outer space and to serve as a means for consultation and discussion. The United States, which was continuing to consult the international scientific community on matters of common interest in the field of space science, welcomed the establishment of the consultative group."¹⁶²

¹⁵⁹ U.N. Doc. A/AC.105/C.2/SR.28, 9.

¹⁶⁰ U.N. Doc. A/AC.105/C.2/SR.16, 4.

¹⁶¹ U.N. Doc. A/AC.105/C.2/SR.20, 11.

¹⁶² *Ibid.* The consultative group is the Committee on Contamination in Extra-Terrestrial Exploration (CETEX). Jenks has noted that "unless clear rules on these matters exist from the outset and are strictly applied, space research will not yield the fruits which we are entitled to expect from it." Jenks, "The International Control of Outer Space," *Third Colloquium* 9.

On May 28, 1963, the Soviet Union delivered to the Secretary-General a document entitled "Dangerous United States Activities in Outer Space," in which it was asserted that the West Ford project was impeding the peaceful uses of outer space. *U.N. Doc. A/AC.105/13.* On June 6, 1963, the United States submitted to the UN a detailed statement relating to the West Ford project in which it was pointed out that it was undertaken only after worldwide scientific opinion had been received and only after the United States "was fully confident that it would not have an adverse effect on any other activity." *U.N. Doc. A/AC.105/15, 7;* *United States Mission to the United Nations, Press Release No. 4219, June 6, 1963.*

This position had been explained in December 1962, to the First Committee of the UN by Senator Gore. He had noted that:

The problems of possible harmful effects of space experiments are difficult at best. They must be studied by competent and objective scientific bodies. To this end we welcome the creation of a consultative group for this purpose by the International Committee on Space Research, COSPAR. The United States will continue to conduct its space programme with a high sense of responsibility in this respect, making available to the world scientific community, both before and after the experiments which it conducts, as much scientific data as is possible. We trust that others will do the same.¹⁶³

In order to insure that the space program of the United States might be as open and cooperative as possible, it has reported its launchings to the U.N. It has also made an "extensive and factual report on our space programme and plans to COSPAR every year."¹⁶⁴

d. *Elimination of Potentially Harmful Outer Space Experiments*

The Australian representative to the legal subcommittee pointed to general concern for the elimination of harmful experiments in outer space, and noted that the Soviet proposal of prior agreement would give one state "an actual veto on a State's proposed space activities."¹⁶⁵ In view of the unlikelihood that either resource state would be willing to be confined by such a restriction, the Australian representative suggested that a proposed potentially harmful use might be linked explicitly with COSPAR's consultative group. He also noted that the duty of states to "consult in the event of a potentially harmful experiment seemed to be either explicity or im-plicity * * *"¹⁶⁶ a common characteristic of the British and Soviet draft proposals.¹⁶⁶ He also held that the 1962 draft of the UAR which called for state activities in outer space to take into account the safety of astronauts and to "be confined solely to the peaceful uses"¹⁶⁷ supported the same conclusion.

During the April-May 1963, U.N. debates, the representative of the UAR, in accepting the principle of the free use of outer space for peaceful purposes, expressed the view that such "freedom should be qualified and limited so as to provide guarantees against abuse."¹⁶⁸

¹⁶³ U.N. Doc. A/C.1/PV.1289, 17.

¹⁶⁴ *Ibid.*, 18-20.

¹⁶⁵ U.N. Doc. A/AC.105/C.2/SR.23, 6.

¹⁶⁶ *Ibid.*

¹⁶⁷ U.N. Doc. A/AC.105/L.6; U.N. Doc. A/5181. Annex 14.

¹⁶⁸ U.N. Doc. A/AC.105/C.2/SR.18, 4.

A form of such abuse would be an unnecessary interference with the safety of outer space. In this connection he stated that "some procedure should be found to prevent further experiments which might have harmful effects and prejudice the sane development of science in space. He referred in particular to the high altitude nuclear tests which had resulted in the disruption of the Van Allen belt and increased the potential danger of manned space flight."¹⁶⁹ This view was supported by the Indian representative, who added, however, the exception that "On rare occasions, a major experiment of such a type might be so important as to be desirable in the interests of science, but it should first be discussed and cleared."¹⁷⁰ Implicit in his remarks was the view that such discussion and clearance would be that of states and not of an international scientific organization, such as the consultative committee of COSPAR. However, he recognized the usefulness of the latter group.

Other representatives had noted during 1962, the possible role of the consultative committee of COSPAR in assisting in determining in advance the potential dangers of space experiments. The Canadian delegate stated that he "welcomed the statement that the United States considered it desirable to have some international agreement on consultation regarding experiments in outer space which might have harmful effects and the suggestion that the consultative group established by COSPAR might serve as an appropriate instrument of consultation."¹⁷¹ He was joined by the Austrian delegate in stating that the participants had achieved a considerable *rapprochement* concerning the need for prior consultations relating to experiments affecting outer space.¹⁷²

In commenting on Paragraph 6 of the Soviet proposal, the Polish representative in 1963, noted that some scientists previously had underestimated the harmful result of space experiments. In order to avoid such hazards in the future, he opined that there should be "close cooperation and consultation between the States concerned."¹⁷³ He did not, however, advocate the Soviet proposal of prior agreement. The Czechoslovakian representative, on the other hand, supported the Soviet view that there should be prior international consultation and agreement before the introduction of potentially dangerous materials into outer space was permitted. He stated that such a step would "serve to guarantee the principle of national security

¹⁶⁹ *Ibid.*, 5.

¹⁷⁰ U.N. Doc. A/AC.105/C.2/SR.22, 7.

¹⁷¹ U.N. Doc. A/AC.105/C.2/SR.27, 5.

¹⁷² U.N. Doc. A/AC.105/C.2/SR.28, 3.

¹⁷³ U.N. Doc. A/AC.105/C.2/SR.19, 7.

and the maintenance of equal rights for all States. Any launching or space experiment undertaken without such consultation and agreement should be prohibited. In that connection, his delegation was distressed at reports that space experiments which had been viewed with misgiving in many quarters might be repeated.”¹⁷⁴ He also noted, as had the Soviet representative earlier, that the “Inter-Parliamentary Union’s sub-commission on the law of outer space had recently voiced disapproval of space projects that did not meet international criteria of acceptability.”¹⁷⁵

By the close of 1963, the Soviet Union had not departed from its view that space experiments must depend upon prior discussion of and agreement upon such measures between the countries concerned. In rejecting the proposal of the United Kingdom that such experiments be based on consultation and cooperation, the Soviet delegate in April 1963, referred to the need for a very serious approach to the problem. He urged that it was not enough “merely to require prior consultation concerning such experiments; the essential need was for prior agreement.”¹⁷⁶

No effort was made to delineate the meaning of “countries concerned,” and it may well be that the Soviet Union, as suggested by the Canadian representative, took the view that one state might veto space experiments. The Soviet position has not been accepted. Clear evidence of this exists in Paragraph 6 of General Assembly Resolution 1962 (XVIII) of December 24, 1963. This paragraph provides:

6. In the exploration and use of outer space, States shall be guided by the principle of co-operation and mutual assistance and shall conduct all their activities in outer space with due regard for the corresponding interests of other States. If a State has reason to believe that an outer space activity or experiment planned by it or its nationals would cause potentially harmful interference with activities of other States in the peaceful exploration and use of outer space, it shall undertake appropriate international consultations before proceeding with any such activity or experiment. A State which has reason to believe that an outer space activity or experiment planned by another State would cause potentially harmful interference with activities in the peaceful exploration and use of outer space may request consultation concerning the activity or experiment.¹⁷⁷

¹⁷⁴ U.N. Doc. A/AC.105/C.2/SR.20, 9.

¹⁷⁵ *Ibid.*

¹⁷⁶ U.N. Doc. A/AC.105/C.2/SR.22, 4.

¹⁷⁷ U.N. Doc. A/RES/1962 (XVIII), Annex 4.

Even before the unanimous adoption of the foregoing paragraph, the Soviet Union, aware that its effort to obtain a veto over space experiments was not acceptable, called for states to "comply strictly with the provisions of General Assembly Resolution 1721 (XVI) concerning registration of space flights."¹⁷⁸ Other successful, and impressive, limitations upon the use of outer space for harmful or potentially harmful uses are reflected in the Moscow Treaty, 1963,¹⁷⁹ and the General Assembly Resolution 1884 (XVIII)¹⁸⁰ relating to the positioning of weapons of mass destruction in outer space.

Thus, it will be seen at the present time there is no disagreement respecting the need for peaceful and reasonable uses of outer space. There is no disagreement as to the need for international cooperation in ascertaining the nature of free and reasonable uses of such space. There is, however, no complete agreement as to what constitutes free, peaceful, and reasonable uses. Nor is there complete agreement as to the nature of restrictions which may be reasonably placed on the free and peaceful uses of outer space. There is being developed, however, a consensus both with respect to the meaning of free and peaceful uses. Thus, it is possible to develop, and there is developing, some meaning as to limitations upon the uses of outer space. However, these important goals are handicapped by the failure of states to agree as to the appropriate procedures to be employed in determining in specific instances what activities are beneficial and in the general interest of mankind and what activities are truly harmful. Despite these serious difficulties, it has, nonetheless, been possible for states working through the Committee on Peaceful Uses of Outer Space and other Committees of the United Nations to arrive at important and specific areas of agreement concerning space activities. The Resolutions of the General Assembly have contributed substantially to an understanding of space uses.

After first calling attention to the legal rights possessed by states to maintain international peace, security, and to engage in self-defense in outer space, an analysis will next be made of areas of *rapprochement* and consensus regarding legal uses of outer space.

¹⁷⁸ U.N. Doc. A/AC.105/C.2/SR.25, 13.

¹⁷⁹ Annex 19, *infra*, pp. 470-472.

¹⁸⁰ Annex 13, *infra*, pp. 462-463.

CHAPTER V

THE RIGHT TO THE MAINTENANCE OF INTERNATIONAL PEACE, SECURITY, AND SELF-DEFENSE IN OUTER SPACE

Attention has been called in preceding chapters to the emergence of principles and rules of international law permitting the free use of outer space for peaceful, i.e., nonaggressive and beneficial, purposes. Such purposes have been described as reasonable. It has been stated that when the uses and exploration of outer space and celestial bodies conform to such peaceful and reasonable activities that such conduct is lawful.

Attention has also been called to the efforts of states, principally through their deliberations in the United Nations, to determine with some degree of specificity the kinds of limitations to be imposed upon space conduct. It is apparent that wholly unrestricted conduct in outer space would contribute neither to a structured legal order in space nor would it be beneficial to the needs of man. This is true no matter whether man is situated on the surface of the earth, in the airspace, or in outer space.

With the massive application of modern science and technology to the secrets of outer space, it has become clearly apparent that this newly exploitable environment may be used in all of the traditional and conventional ways pertaining to airspace and to the earth's surface. With this understanding has come the need to consider the legal rights of a state to the maintenance of peace, security, and self-defense in outer space.

The new tempo of man's existence has consolidated and capsulized both time and space. From this point of view there is a need for man to have an early and constant awareness of acceptable standards of space conduct and the content of space law. From the legal point of view it must be kept in mind, pursuant to General Assembly Resolutions 1721 A (XVI), 1802 (XVII), and 1962 (XVIII),¹ and the consensus of states as reflected by their constant behavior, that international law and the Charter of the United Nations apply to space activities.

¹ Annexes 2, 3, and 4, *infra*, pp. 443-452.

Just as certain standards of conduct have developed for the peaceful exploitation of the scientific resources of outer space, so also there are both old and rapidly emerging standards applicable to the security needs of states in space. Thus, with the swiftly evolving capabilities of resource states to make use of the space dimension, there has also come the recognition that it is a sharable resource. Accordingly, its use is not limited or restricted to a single state. World claims to the exploitation of outer space have resulted from the actual uses of the dimension. Such claims have been honored through common usages and practices.

The concept of claims has been developed by McDougal and Lipson, who have stated that, like other claims in international law, the claims to the use of outer space "carry a promise of reciprocity, combined wherever possible with latent or expressed threats of retaliation or reprisal if the complementary promise is dishonored. This pattern of reciprocally tolerated access to outer space for sharable or inclusive uses may be restricted by the attempt to ensure the public order of the world community through devices providing security from military attack, preventing or at least making difficult the activities of unaccountable (flagless) space objects or spacecraft (to be compared with measures against piracy on the high seas) and imposing rules of the road."²

The requirements of national defense in the space age have taken on new proportions in view of the actual and potential applications of modern science and technology to outer space. Man's concern will be directed to protection from harm in outer space no less than to protection on earth from activities which have their source in space. His aspirations for security are deeply indigenous to his entire political-legal environment.

Presently existing international legal obligations deny to states the legal right to threaten or engage in aggression in order to resolve international disputes. While it is inevitable that serious differences may exist among states as the result of competing national interests, yet it is possible for such difficulties to be resolved in the political-legal forum. This forum, represented in an institutionalized form by the United Nations and regional organizations, unhappily

² McDougal and Lipson, "Perspectives for a Law of Outer Space," 52 *A.J.I.L.* 415-416 (1958); *Legal Problems of Space Exploration, A Symposium* 417. They have noted that states in the attainment of a modicum of security will be concerned with "the indefinite postponement of unacceptably destructive violence, the achievement of some stability of expectation as to modes of exercising effective power, [and] the maintenance of public order against hostile or reckless or capricious threats." *Ibid.*, 418.

is not a perfect one for the resolution of serious international conflict. Were it more perfect than it is, it might be possible for a monopoly of international sanctions to be exercised by an international institution. Every effort, it may be suggested, must always be made to resolve outer space difficulties through collective international processes. However, when such institutions—because of their primitive quality, or for other reasons—are not able to use effectively the powers possessed, or are lacking in powers, then it becomes readily apparent that states may be obliged in grave matters to engage in self-help. In international law this is known as the inherent right of self-defense. It may be collective or individual. Its use is circumscribed by political and legal considerations. These considerations have direct applicability to national and international rights and duties in space. It has been observed that "The dangers to peace which exist and which may exist in the future stem from the threat or use of force in violation of international legal obligations. The standards which must be used in determining and controlling exertions of national power have not been altered by the new world which outer space activities has opened."³ Under these circumstances, international respect for important common interests, based upon an awareness of the mutuality of certain interests among resource states, may serve as a foundation for an ordered legal structure for outer space.

A. LEGAL AUTHORITY FOR DEALING WITH CERTAIN USES

In the international arena, as in the municipal forum, many controversies may be resolved without recourse to force or coercion. The interests of the world community are very frequently best protected through the use of negotiation in seeking the resolution of disputes.⁴ Negotiation carries with it a vast range of opportunities for peaceful settlements, and diplomacy may be able to utilize the breadth of its capabilities in arriving at mutually acceptable resolutions of given problems.

Law's scope for dealing with problem situations, although not so broad as that of negotiation, has, nonetheless, a wide spectrum of principles, standards, and rules through which international disputes may be resolved and ameliorated. The versatility of the law for successful compromise in the face of seemingly unresolvable difficulties has been well summed up by Jackson who has properly made

³ Meeker, "Observation in Space," *Department of State Press Release No. 191* (Revised), April 12, 1963, 7; 48 *Department of State Bulletin* 750 (1963).

⁴ U.N. Charter, Chapter VI, especially Article 33.

the point that law possesses a certain "statecraft."⁵ It is as much the function of international law to establish the principle that space may be used freely for peaceful purposes as it is its function to establish the legal duty of states to abstain from certain uses of outer space. International law, including the U.N. Charter, assures to states the right to enjoy the benefits of international peace and security and provides them with a legal right to maintain international peace and security. A state is also entitled, under international law, to maintain its continued existence and is permitted pursuant to the rule of law to engage in measures of self-defense, either collective or individual, to uphold this right.

Prior to the present century, international law devoted much of its attention to the regulation of the manner in which war between nations might be conducted. During the twentieth century, however, an effort has been made to transfer to the United Nations a monopoly on the use of international force. The manner in which states may protect their essential rights is now very much affected by the terms of the Charter of the United Nations dealing with the maintenance of international peace, security and self-defense. It should be noted, however, that the fundamental rights and duties of states are affected by the totality of international law no matter what form it may take. In addition to the Charter this includes, among other sources, general customary international law. From the latter is derived initially the inherent right of a state to protect itself against the aggressive or potentially aggressive conduct of another.⁶

1. The Legal Duty to Abstain from Certain Uses

Through the deliberations at the United Nations, and by other means, it has been demonstrated that a virtually unanimous consensus exists that outer space and celestial bodies should be used solely for peaceful purposes. The existing resource states have given their approval to this principle.⁷ The United States has from the very first insisted that space must be used for nonaggressive and beneficial purposes. While the Soviet Union has not expressly and formally accepted this formula in an international treaty, it should be noted that it has not expressly—nor implicitly—rejected this view. Both states have clearly indicated that the use of outer space must be controlled, and this has demonstrated that both are of the view that certain, including some specifically delineated, activities are not

⁵ Jackson, *Jurisprudence in Action*, Foreword, iv, (1953).

⁶ *Infra*, pp. 322-332.

⁷ U.N. Doc. A/5656; A/RES/1962 (XVIII), Annex 4, *infra*, pp. 450-452. Compare, U.N. Doc. A/5571; A/RES/1884 (XVIII), Annex 13, *infra*, pp. 462-463.

permissible. As a result of their discussions and exchanges of points of view, it has been possible for certain common interests to be identified.

At the time of this writing neither state has placed weapons of mass destruction into outer space. Each has expressed the view that this should not be done and both have agreed to, and supported, General Assembly Resolution 1884 (XVIII).⁸ Each has cautioned that if one should do so, the other would be obliged to act similarly. Thus, the condition at the present may be described as one of mutual restraint based on law.

The existence of an express agreement in this area is important in view of the traditional principle of international law that when national conduct is not prohibited, it may be argued that it is permitted.⁹ Nonetheless, if resource states continue to refrain from this particular use of space for an undesignated period of time—probably a short period by reason of the speed with which customary international law affecting outer space has developed—it might, as a result of such conduct, readily be assumed that the stationing of such space objects in outer space or on celestial bodies had become unlawful. In view of the fearful dangers which the presence of such devices might potentially bring to all mankind, or may be assumed to bring, it is hard to conceive that there could be a consensus supporting their legality, or that their mere presence could be regarded as a peaceful use.

2. The Right to the Maintenance of International Peace and Security

To properly discuss this topic, it becomes necessary to make some assumptions. First, assume that a weapon of mass destruction has been unilaterally introduced into outer space or placed on a celestial body. Second, we must assume also that this action is violative of man's general expectations of a legal order in the universe because of the extreme threat of disastrous force represented by the presence of such an object. Under these circumstances there would arise a need to determine the legal bases for dealing with such a vehicle. Since the probable effect of the exploitation of such force would not substantially exceed the effect realizable through its presence and threatened use, there would appear to be no need to distinguish between the threat of use and actual use. In short, mere presence presumably would constitute so grave a danger that it could be legally assimilated to actual aggressive use.

⁸ *Op. cit.*

⁹ *Supra*, pp. 142, 266-267.

Aggression may be proven by demonstrating an intentional and wholly unprovoked armed attack. This is the clearest and most classic example. However, it is equally clear that aggression may take many forms. Thus, for example, the Inter-American Treaty of Reciprocal Assistance of 1947, frequently referred to as the Rio Treaty or Pact, made provision in Article Six for a condition in which an aggression "is not an armed attack * * *" ¹⁰

Further, aggression appears to be but one of several ways in which great harm may be brought to a state and its people. It is frequently cited as a leading example because of the gravity of the consequences attendant upon its employment. However, the key problem is not so much the matter of aggression, but rather the application of an unacceptably large amount of harm—either immediate or potential (and if potential without a real opportunity for the potentially harmed state to redress the situation in a manner favorable to itself) by one state to another. Thus, the violation of the integrity of territory, or the prejudicial limitation of sovereign rights, or the restriction of the political independence of a state, or the intentional violent modification of an existing political-military equilibrium by positioning weapons of mass destruction in outer space would each illustrate a national effort to apply an unacceptably large amount of harm by one state to another. This is taken into account by the Charter of the United Nations when it was made applicable to outer space and celestial bodies through General Assembly Resolutions 1721 (XVI), 1802 (XVII) and 1962 (XVIII). General Assembly Resolution 1884 (XVIII) also has a direct application to this situation.

Article 1 of the Charter, in making provision for the purposes and principles of the Organization, provides that an essential objective is to maintain international peace and security. To this end, provision is made for the collective "suppression of acts of aggression or other breaches of the peace." The same article takes into account the need for the adjustment or settlement of situations "which might lead to a breach of the peace." The Charter imposes the duty on each member to act in accordance with the following provision of Article 2(4) :

All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or

¹⁰ 21 UNTS 93, *et seq.* (1948).

political independence of any state, or in any other manner inconsistent with the purpose of the United Nations.¹¹

In view of these provisions, albeit general in nature, it may be urged that there is a duty on the part of states not to position weapons of mass destruction in outer space or celestial bodies. Further, by reason of the express terms of General Assembly Resolution 1884 (XVIII), it is now clearly established that the presence of such weapons in outer space may be considered to be a threat to the territorial integrity or political independence of any state.

Under Article 1(2) each nation has the duty "to strengthen universal peace." Article 2(3) requires of each member that it not endanger "international peace and security" in the resolution of international disputes. Article 2(6) extends to nonmembers the duty to conform to "the maintenance of international peace and security." These articles, then, which set out the "Purposes and Principles" of the Charter, as well as other articles, make abundant reference to the legal duty of states to conform to the principles of "international peace and security." Additionally, as a regional requirement, there is the law of the 1947 Rio Pact.

The legal principles of Article 2(4) fall into two parts. In the first, there is imposed a duty on states to conform to the principles of international peace and security by refraining from conduct which would unnecessarily and improperly aggravate interstate relations. It may be concluded that the placing of weapons of mass destruction in orbit, or upon a celestial body, or nuclear testing in the atmosphere, outer space, or under water, would have such an effect, and that such conduct is not legally permissible. In the second, assuming the prior orbiting of weapons of mass destruction, or their emplacement upon a celestial body, or nuclear testing of the kinds inhibited in the Moscow Treaty, 1963, the principles of Article 2(4) permit action designed to correct such dangerous conditions. The action taken to correct such threats to international peace and security is neither in violation of Article 2(4) nor inconsistent with the purposes and principles of the Charter.

¹¹ For the background of Article 2(4), see Davis "First Commission: General Provisions," in the *United Nations Charter: Development and Text*, 413 *International Conciliation* (September 1945); 6 *United Nations Conference on International Organization* 80-82, 696-705; Russell and Muther, *A History of the United Nations Charter*, Chapters V-IX, XXIV, and pages 455-457, 473-476, 655-657, 672-675, 1067 (1958). Compare McDougal and Feliciano, "Legal Regulations of Resort to International Coercion: Aggression and Self-Defense in Policy Perspective," 68 *Yale Law Journal* 1146 (1959).

Article 2(4) is, therefore, the source of a legal duty requiring states to desist from aggravated courses of action. It also is the source of affirmative corrective action—authorizing, but not requiring, states (either in an individual or collective capacity) to engage in protective measures intended to correct departures from fundamental legal principles. This is not inconsistent with Chapter VI of the United Nations Charter and its provisions for the pacific settlement of disputes.

3. The National Right to Self-Defense

Just as the legal rights and duties which flow from the Charter concepts of international peace and security apply on the surface of the globe and to the superjacent airspace, so they apply also to outer space. And, as the legal concepts of self-defense have applicability on earth and in its airspace, they likewise have applicability to outer space.

The international law of self-defense is derived from two principal sources. These are general customary international law and the Charter of the United Nations. Both sources are closely interrelated, and in fact the customary right of self-defense must be taken into account in interpreting the Charter provision, namely, Article 51.

Article 51 provides in part:

Nothing in the present Charter shall impair the inherent right of individual or collective self-defense if an armed attack occurs against a member of the United Nations, until the Security Council has taken the measures necessary to maintain international peace and security * * *.

Customary international law has long recognized that self-defense is an inherent national right. It has been referred to as an “inalienable right”¹² which has been “confirmed in the United Nations Charter.”¹³ Although Article 51 of the Charter uses the term “armed attack,” it has not generally been thought that a state must actually have felt the force of an adversary’s weapons before it may engage in legitimate self-defense. In looking at the customary principles of

¹² Deputy Secretary of Defense Gilpatric, *Department of Defense Press Release No. 1426-62*, (September 5, 1962).

¹³ *Ibid.* Compare, Brownlie, “The Use of Force in Self-Defense,” 37 *Brit. Yb. Int’l L.* 219-247 (1961). A careful analysis has been made by Bowett, *Self-Defense in International Law* (1958); see also Mallison, “Limited Naval Blockade or Quarantine-Interdiction; National and Collective Defense Claims Valid under International Law,” 31 *George Washington University Law Review* 367 (1962). Compare, Kunz, “Individual and Collective Self-Defense,” 41 *A.J.I.L.* 872 (1947).

international law, it becomes clear that a state may engage legally in self-defense in provocative circumstances, particularly where it reasonably appears that the dangers being mounted against it may, if placed in motion, materially or substantially impair its way of life or prejudice its right to its own continued existence.

A restrictive interpretation has been made of the national right of self-defense by those writers who have placed a literal construction on the term "armed attack" as contained in Article 51. This would require a state to remain passive until after a physical attack had been launched, and has been based on the view that the best evidence of an armed attack is the resultant force. This view refuses to take into account considerations of intention and manifestations of intent as demonstrated by observable facts and conditions short of the ultimate resort to force.

In the space age, and particularly in the context of the possibility of introducing an artificial satellite into orbit equipped with a weapon of mass destruction, it does not appear to be reasonable to accept the literal interpretation of "armed attack" as the condition precedent to employment of measures of self-defense. An excessively narrow view of the meaning of "armed attack" is quite "out of keeping with the dynamic quality of law and with the tempo of our twentieth century social complex."¹⁴

Scientific and technological considerations make it impossible to accept the passive or "sitting duck"¹⁵ view of armed attack from any of the earth's dimensions. Both general customary international law and the rule of Article 51 provide adequate foundations upon which to base action relating to the impermissible presence in space of weapons of mass destruction. This has been stated in McDougal and Lipson as follows:

Certainly, in the absence of general agreement and community institutions to restrict inclusive uses to peaceful purposes, states will continue to assert, within the limits of their effective power, a unilateral competence to police or destroy space objects re-

¹⁴ Christol and Davis, "Maritime Quarantine: The Naval Interdiction of Offensive Weapons and Associated Materiel to Cuba, 1962," 57 *A.J.I.L.* 532 (1963). Compare McDougal and Feliciano, *Law and Minimum World Public Order* 121-260 (1961); Dillard; Pugh; Friedman; Lissitzyn in *Columbia Law School News* (November 7, 1962).

¹⁵ Berle; Lissitzyn in *Columbia Law School News* (November 7, 1962). The term "sitting-duck" is also used by McDougal and Feliciano in "Legal Regulation to Resort to International Coercion: Aggression and Self-Defense in Policy Perspective," *supra* note 11, at 260.

garded as impermissibly affecting the security of their land masses. With respect to the oceans, assertion of such unilateral competence has been made and accepted for many purposes, including the protection of health, revenue, internal monopolies, and so on. Conceivably, a similar development in demand and reciprocal tolerance for a variety of purposes may occur with respect to outer space.¹⁶

Cooper has considered the precise issue presented here, and has asked "What are the rights of self-defense in outer space?" and "Concretely, when and where may a nation in self-defense attack a suspected spacecraft?"¹⁷ He has also asked "Is it permissible for a state to intercept in outer space a foreign spacecraft known to be armed with a nuclear warhead and thereby constituting a source of potential attack on any state flown over?"¹⁸ After a careful review of restrictive interpretations of Article 51 on the part of Kunz,¹⁹ Kelsen,²⁰ Jessup,²¹ and Krylov, and less literal interpretations of the meaning of "armed attack" by Goodhart,²² and McDougal,²³ Professor Cooper has rejected the restrictive interpretations. In doing so he stated that "neither Article 2 nor Article 51 nor the Charter as a whole has, in my considered judgment, limited or destroyed the fundamental right of a State to defend itself by force against imminent attack or danger threatening its existence. * * * Certainly the Charter was not intended as an instrument of reverse world feeling against aggression."²⁴

Goodhart has stated the correct rule that "all powers which have not been expressly or by necessary implication transferred to the United Nations remain in the individual States. They hold these powers not by grant but by sovereign right."²⁵ Lord Kilmuir, Lord Chancellor of Great Britain, told the British Parliament on November 1, 1956, with regard to the meaning of Article 51 that it "would

¹⁶ McDougal and Lipson, *supra* note 2, at 427.

¹⁷ Cooper, "Self-Defense in Outer Space and the United Nations," 45 *Air Force and Space Digest* 51-52 (February 1962).

¹⁸ *Ibid.*, 53.

¹⁹ Kunz, "Individual and Collective Self-Defense in Article 51 of the Charter of the United Nations," 41 *A.J.I.L.* 871 (1947). It should be noted that in some instances views on this subject expressed immediately after the drafting of the Charter have been modified by an appreciation of the scientific and technological changes in weaponry.

²⁰ Kelsen, *The Law of the United Nations* 797-799 (1951).

²¹ Jessup, *A Modern Law of Nations* 163-166 (1955).

²² Goodhart, "The North Atlantic Treaty," 79 *Recueil des Cours* 193 (1951).

²³ McDougal and Feliciano, *supra* note 11, at 1057.

²⁴ Cooper, *op. cit.*, 55.

²⁵ Goodhart, *op. cit.*, 55.

be a travesty of the purpose of the Charter to compel a defending State to allow its opponent to deliver the first fatal blow.”²⁶ The situation was well summarized by Green, a distinguished British international lawyer, as follows: “The right of self-defense was inherent before the Charter was written; it has remained inherent and as such it covers preventive self-defense as well as self-defense resorted to after you have already been exterminated.”²⁷ Elihu Root in addressing the American Society of International Law summed up the basic proposition in 1914 when he stated that each sovereign state has the right “to protect itself by preventing a condition of affairs in which it will be too late to protect itself.”²⁸

The extent of national sovereignty is no measure of the area in which a state may employ legitimate measures of self-defense. Thus, self-defensive acts may be employed on and above the high seas, and they may also be used in outer space. The legal conditions under which valid self-defense may be engaged in have been well known and well respected for many years. The classic instance of self-defense, including limitations thereon, resulted from the destruction in the United States by British forces of a vessel, *The Caroline*, which had been employed in 1837 on the Niagara River in support of Canadian insurgents. It was the British contention that the act of destruction was an instance of valid self-defense. Daniel Webster, the American Secretary of State, asserted that it was incumbent upon the British and Canadian authorities to justify the attack, and that in order to do so it would be necessary to show “a necessity of self-defense, instant, overwhelming, leaving no choice of means and no moment of deliberation.”²⁹ He also stated that where self-defense under such circumstances was admitted as being lawful, it was incumbent upon the actor to demonstrate that nothing unreasonable or excessive had been done, for, as he indicated “the act, justified by the necessity of self-defense, must be limited by that necessity and kept clearly within it.”³⁰

If, under appropriate conditions, self-defense may be pursued within the territory of another state, it would appear that there could be no objection to recourse to self-defense, if the conditions are appropriate, where the nonsovereign dimension of outer space is used. There would appear to be an even greater right, and certainly

²⁶ “House of Lords Debates,” 6 *Int'l & Comp. L. Q.* 330 (1957).

²⁷ *International Law Association, Report of the 48th Conference* 517 (1958).

²⁸ Root, “The Real Monroe Doctrine,” 8 *A.J.I.L.* 432 (1914).

²⁹ *The Caroline*, 2 Moore, *Digest of International Law* § 217 (1909). Compare Jennings, “The Caroline and McLeod Cases,” 32 *A.J.I.L.* 8 (1938).

³⁰ *The Caroline*, *ibid.*

no involvement with the doctrine of sovereignty, because of the provisions of General Assembly Resolutions 1721 (XVI), 1802 (XVII), and 1962 (XVIII). The latter states that neither outer space nor celestial bodies might be made the subject of "national appropriation by claim of sovereignty, by means of use or occupation, or by any other means." It would not be an invasion of the sovereign rights of a state to engage in legitimate self-defense in outer space.

However, it would still be the duty of the state engaging in self-defense to employ only such measures as were reasonably proportionate to the threat. This doctrine requires an offended state to use only such proportional means as are necessary to induce the offending state to withdraw from its offending course of conduct, provided, however, that the offended state is not required by international law to delay its response in the face of any real threat. For example, in the 1962 maritime quarantine of the shipment of offensive weapons and associated materiel to Cuba, the interdictory activities were restricted to areas of the high seas radiating out from Cuba a limited distance, and the interdictory activities were limited to prescribed offensive weapons and associated materiel. This response was considered by the United States to be proportionate to the condition resulting from the management and delivery to Cuba by Soviet personnel of offensive weapons constituting a threat to the United States from Cuba.³¹ However, in those circumstances it was abundantly clear, if Soviet weapons and personnel had not been removed from Cuba as the result of the limited coercive pressures imposed upon Soviet shipping, that additionally more severe coercive measures would have resulted. The doctrine of proportionality possesses a multioptioned spectrum of coercion. This was described by Secretary of State Rusk during the 1962 Cuban crisis in these words: "We must tailor our response, individually and collectively, to the degree and direction of the threat, be firm in our convictions and resolute and united in our actions."³²

The doctrine of proportionality is not restricted to a condition of self-defense. Proportionality applies with equal logic to coercive actions taken in response to the need to enforce a condition of international peace and security pursuant to the Charter of the United Nations, the Rio Pact, or any other international agreement specify-

³¹ Christol and Davis, *supra* note 14, at 525-545. Compare Meeker "Defensive Quarantine and The Law," 57 *A.J.I.L.* 515 (1962).

³² Rusk, "American Republics Act to Halt Soviet Threat to Hemisphere," 47 *Department of State Bulletin* 721 (1962). On the concept of reasonableness, see McDougal, Lasswell and Vlasic, *Law and Public Order in Space* 293, 304-6 (1963).

ing a duty to conform to the needs of international peace and security. In this connection, it should be noted that the 1962 maritime quarantine of the shipment of offensive weapons and associated materiel to Cuba was not based exclusively, or even essentially, on the legal doctrine of self-defense, but rather was based principally on the right of a collectivity of states, acting pursuant to a regional agreement within the compass of the U.N. Charter, to uphold, in an affirmative way, the principles of international peace and security. The Legal Adviser to the Department of State has described the 1962 quarantine action as one "authorized under the Rio Treaty of 1947, whose primary purpose was to organize law-abiding states for collective action against threats to the peace."³³

4. Reprisals

Reprisals in international law constitute a form of self-help, and are not unrelated to the doctrine of self-defense. In modern theory they are regarded as a form of force used by a wronged state against another because the first state has engaged in unlawful conduct adverse to the interests of the injured state. Were it not for the wrongful conduct of the guilty state, the response through the act of reprisal would be regarded as unlawful. A distinguishing feature of a reprisal has been that a national response need not conform to the form of conduct practiced against it, but may "take any form of coercion which the state believed to be effective to secure redress."³⁴ Fenwick has also noted that "In principle, reprisals of the more drastic character were not to be distinguished from acts of war."³⁵ However, it is true that "acts of force performed by one State against another by way of reprisal * * * are not necessarily acts initiating war."³⁶ The other state always has an election as to whether it considers such acts as constituting an act of war.

³³ Chayes, "Law and the Quarantine of Cuba," 41 *Foreign Affairs* 555 (1963). Compare Chayes, "The Legal Case for U.S. Action in Cuba," 47 *Department of State Bulletin* 763 (1962).

³⁴ Fenwick, *International Law* 533 (3d ed. 1948). See *The Naulilaa Incident*, 8 *Recueil des Decisions des Tribunnaux arbitraux mixtes* 409, 422-425 (1928); Briggs, *The Law of Nations* 677-679 (1938).

³⁵ Fenwick, *op. cit.*, 533.

³⁶ II Lauterpacht-Oppenheim, *International Law* 203 (7th ed. 1952). Kunz has noted that "reprisals can be conceived of as sanctions, because they presuppose a delict, even if auto-determined by the state exercising the reprisals * * *." "Sanctions in International Law," 54 *A.J.I.L.* 325 (1960); Article 41 of the U.N. Charter enumerates measures open to the Security Council not involving the use of armed force. Article 42 makes reference to measures by air, sea, or land forces. It is generally agreed that the use of such measures should be preferably collective rather than unilateral, when the maintenance of international peace and security is at issue.

Under these circumstances the illegal introduction into outer space by one country of an instrument of mass destruction contrary to General Assembly Resolution 1884 (XVIII) might be considered by another state to entitle it to act similarly. But, as reprisals need not conform to the initiatory action, it would be possible—through a reprisal action—for the harmed state to effect the destruction of, or to deal more sparingly with, the offending space vehicle and its weapon. At that point each state would have to decide whether the initial act and the response would result in a condition of war. The gravity of the initial illegal conduct would grant to the harmed state the right to use all suitable means to protect itself.

In this area, as in the areas of self-defense and the maintenance of conditions of international peace and security, the international law of outer space will play a role. States, in arriving at policy decisions respecting the variable uses of outer space, must take into account "the ways in which authority will and should be prescribed and applied, will undoubtedly grow by the slow building of expectations, the continued accretion of or repeated instances of tolerated acts, the gradual development of assurance that certain things may be done under promise of reciprocity and that other things must not be done on pain of retaliation."³⁷

B. COMPETENCE TO DEAL WITH CERTAIN USES

A state, such as the United States, which continually has given evidence of its support of the rule of law in world affairs, must always maintain a sound and sufficient legal basis for its activities in outer space. In the face of potential national conflicts of interest as to the uses of outer space and celestial bodies, the United States, along with other states, possesses certain options relative to legal conduct.

The enforcement of legal rights may be collective. On the other hand, it may be individual. These methods of procedure must be examined in the context of the principles of international peace and security as well as in the context of self-defense. Further, the concept of the maintenance of international peace and security as derived from the Charter of the United Nations must be examined in the additional context of enforcement by a regional agency or by separate and distinct collective security organizations. When emphasis is placed on a regional agency, such as the Organization of American States, attention must be focused on Article 52(1) of the Charter. When emphasis is placed on a wider collective security process, then

³⁷ McDougal and Lipson, *supra* note 2, at 420.

attention must be focused on Article 2(4) of the Charter, but at the same time taking into account the Charter in its entirety. At the same time due attention must be given to the general principles of international law, including general customary international law. This also holds true when enforcement procedures are contemplated through mutual security arrangements.

In such situations the emerging international law of outer space has benefited very materially from the law of the sea. Both the high seas and outer space and celestial bodies fall into the legal category of *res communis omnium*. This means that each dimension is free for the use of all, but that in no case does such freedom entail unlimited or unrestricted conduct. As has been previously suggested, two important modern limitations upon such freedom of use are that neither dimension may be used exclusively by one state, and lawful uses are restricted to nonaggressive, i.e., peaceful and beneficial activities.

The 1962 maritime quarantine of the shipment of Soviet offensive weapons and associated materiel to Cuba, as one aspect of the law of the sea, affords valuable insights to the principles and rules of the international law of outer space. The 1962 maritime quarantine was a collective action, authorized under Article 52(1) of the U.N. Charter, and was implemented under the terms of Article 6 of the Rio Treaty. Article 52(1) provides in part:

1. Nothing in the present Charter precludes the existence of regional * * * agencies for dealing with such matters relating to the maintenance of international peace and security as are appropriate for regional action, provided that such * * * agencies and their activities are consistent with the Purposes of the United Nations.

There is much legal analysis upholding the view that a collectivity of states, as in the maritime quarantine, has the right to uphold affirmatively international peace and security when such action is taken pursuant to a regional agreement within the compass of the Charter of the United Nations.³⁸ This view has received the express approval of the United States Department of State.³⁹

As is well known, the maintenance of international peace and security by collective measures is a primary responsibility of the United

³⁸ Christol and Davis, *supra* note 14, at pp. 537-539; McDevitt, "The UN Charter and the Cuban Quarantine," 17 *The JAG Journal* 72-75 (1963).

³⁹ Chayes, *supra* note 33, at 555 and 763; Meeker, "Role of Law in Political Aspects of World Affairs," 48 *Department of State Bulletin* 87 (1963).

Nations. Article 1(1) of the Charter, in setting forth the purposes and principles of the United Nations, provides:

To maintain international peace and security, and to that end: to take effective collective measures for the prevention and removal of threats to the peace, and for the suppression of acts of aggression or other breaches of the peace, and to bring about by peaceful means, and in conformity with the principles of justice and international law, adjustment or settlement of international disputes or situations which might lead to a breach of the peace. Article 24, which makes provision for the functions and powers of the Security Council, grants to that body the "primary responsibility for the maintenance of international peace and security." This responsibility, although primary, is not exclusive, and as a result of the "Uniting for Peace Resolution" of November 3, 1950, the General Assembly assumed the authority to engage in the maintenance of international peace and security during the Korean police action. This resulted in the implementation in Korea of collective security measures against aggressors located in North Korea and in Red China, and was certainly a notable precedent in the use of collective measures to protect the right of the world community to international peace and security.

Collective defense measures may also be instituted pursuant to Article 51 of the Charter of the United Nations. Such action is lawful when a state is obliged to engage in self-defense pending appropriate action on the part of the Security Council (or General Assembly pursuant to the Uniting for Peace Resolution) to maintain international peace and security. Article 51 also makes express provision for "the inherent right of individual" self-defense. In both instances the state or states engaged in individual or collective self-defense are required to report action taken by them to the Security Council. The Security Council, pursuant to Article 51, and the General Assembly, pursuant to the Uniting for Peace Resolution's interpretation of the Charter, continue to have authority to take such action as is deemed reasonably necessary to maintain or restore international peace and security.

Article 51 makes no legal delineation between collective or individual self-defense other than in terms of the number of participants. However, the distinction between maintenance of international peace and security on the one hand, and self-defense on the other is marked. Self-defense may be either individual or collective. The presumption is that the maintenance of international peace and security would be by collective processes, although this is still open to some doubt, and

it may be possible to find situations in which the maintenance of international peace and security could be accomplished, initially, by individual means.

In a recent analysis of the theory of collective self-defense, McDevitt has come to the conclusion that a choice between collective and individual self-defense is not a legal one. It was his view that practical conditions such as the nature of the provocative act, the type of danger likely to befall the receiving state, the capacity of the Security Council to take adequate control of the situation, the manner in which the offending state created the dangerous condition, and whether the defensive action taken was imperative under all of the attendant circumstances had to be taken into account in arriving at a decision.⁴⁰ In the space age, where time itself has taken on a new dimension and where the existence of fearful weapons of mass destruction would constitute a threat of a new order of magnitude, the political and military considerations would seem to argue for individual self-defense, if the threat were to emanate from a space-borne weapon of mass destruction.

Although the term self-defense emphasizes individual as opposed to collective or universal defense, it should not be overlooked that the successful defense of one state serves as a substantial benefit to the whole community. Still, individual self-defense as a legal doctrine is subject to national abuse. In the 1962 Cuban situation, the government of Cuba asserted that it was permitted to position offensive weapons on its shores because of its need to defend itself against aggression from the United States.⁴¹ Germany attacked Poland in 1939 because of the claimed necessity for German "self-defense" against "aggressive" Polish intent. The doctrine has, throughout

⁴⁰ McDevitt, *supra* note 38, at 75-82. Compare Brownlie, *supra* note 13, at 219, and Bowett, *supra* note 13.

⁴¹ Third parties are prone to employ the term "aggression" in passing political judgment on interstate relationships. Thus the Soviet government during the 1962 Cuban crisis stated that the President of the United States in upholding the collective quarantine action had tried "to justify these unprecedented aggressive actions by alleging that a threat to the national security of the United States emanates from Cuba." Further, "The United States Government accuses Cuba of allegedly creating a threat to the security of the United States. It is hypocrisy, to say the least, to allege that small Cuba can encroach on the security of the United States of America." The Soviets added, "all weapons of the Soviet Union serve and will serve the purposes of defense against aggressors." Further, "the Soviet Government will do everything in its power to thwart the aggressive designs of the imperialist circles of the United States, to safeguard and consolidate peace on earth." *New York Times*, October 24, 1962. Compare, Tunkin, "Introduction," 1960 *Soviet Year-Book of International Law* 22 (1961).

history, been convenient to those states which have sought to violate the sovereignty and territorial integrity of other states or to engage in power politics in the international arena.

For this reason the use of collective measures is generally to be preferred to individual coercive activities. In the international community, no less than within the municipal processes of states, the rule of law generally requires that the first reference of disputes be to community legal processes. The maintenance and extension of man's central values require conformity to this goal. The Charter of the United Nations, as a legal document, as well as the conscience of mankind, reflects the "Judgment of the world community that collective action is to be preferred to the unrestricted use of force by individual nations * * *." ⁴² It has often been urged that States living under the regime of that Charter can no longer find justification for the use of force in their mere unilateral declaration.⁴³ For these reasons it has often been suggested that "the willingness of states to undertake the enforcement of international peace and security is the mark of conscience and a developed standard of values."⁴⁴ The same holds true for the collective enforcement of the legal condition of self-defense.⁴⁵

A sound policy decision between the use of collective as opposed to individual processes for the maintenance of legal rights in outer space must depend on the nature of the threat to community and individual expectations for international peace and security. Many voices have pointed to the dangers which may be directed toward states from outer space.⁴⁶

The nature of the dangers, and the need for immediate response to threatened harm from outer space, must necessarily affect a nation's choice to employ individual or collective measures. It also suggests the need for inordinate caution in arriving at a decision to position weapons of mass destruction in outer space. In this connection, Berkner in 1958, noted that it may be necessary to use such a weapon as a military force "but that its employment is sufficiently dangerous

⁴² Chayes, *supra* note 33, at 553-554.

⁴³ *Ibid.*

⁴⁴ Christol and Davis, *supra* note 14, at 538.

⁴⁵ It should be noted that a preference for collective processes may serve the interests of those states possessing extensive and reliable security commitments.

⁴⁶ Gavin, *War and Peace in the Space Age* 220-1 (1958); White, "Air and Space are Indivisible," *Air Force* 40 (March 1948); White, "The Aerospace and Military Operations," 12 *Air University Quarterly Review* (Winter-Spring 1960-1961); Lerner, *The Age of Overkill* (1962); Lapp, *Kill and Overkill* (1962).

to the uses in its present total form to imply that it can be used only with the greatest circumspection and for compelling motives.”⁴⁷ President Eisenhower’s Science Advisory Committee, in 1958, stated a national policy when it observed “We wish to be sure that space is not used to endanger our security. If space is to be used for military purposes, we must be prepared to use space to defend ourselves.”⁴⁸ Killian, in 1932, reconfirmed this view when he stated that for the sake of the free world the United States “must not slacken in (its) determination to maintain military strength adequate to deter an aggressor. This is still, in my view, the surest way to deter war and to give a sense of confidence and stability to the Free World.”⁴⁹

In 1962 President Kennedy stated that the United States could not go “unprotected against the hostile misuse of space any more than we go unprotected against the hostile use of land or sea.”⁵⁰ In the same month, Secretary of State Rusk told the Senate that “no great nation can ever abandon its elementary right of unilateral action if that becomes necessary for its own security.”⁵¹ Although the response in October 1962, to the threat posed by the Soviet Union in Cuba was a collective one, President Kennedy in answer to a hypothetical question relating to that situation remarked that “the United States has the means * * * as a sovereign power to defend itself. And, of course, exercises that power; has in the past; and would in the future. But we, of course, keep to ourselves and hold to ourselves, under the United States Constitution, and under the laws of international law, the right to defend our security. On our own, if necessary—though we, as I say, hope to always move in concert with our allies, but on our own, if that situation was necessary to protect our survival or integrity of other vital interests.”⁵²

It seems reasonably clear that the right of a state to its continued existence, as reflected in its fundamental concern for its own security, is the central issue in international law and relations. International law authorizes states to protect their security rights by reference to

⁴⁷ Berkner, “Earth Satellites and Foreign Policy,” 36 *Foreign Affairs* 225 (1958).

⁴⁸ *Introduction to Outer Space*, The President’s Science Advisory Committee I (1958).

⁴⁹ Killian, “Shaping a Public Policy for the Space Age,” in Bloomfield, ed., *Outer Space Prospects for Man and Society* 187 (1962).

⁵⁰ *New York Times*, September 13, 1962.

⁵¹ Rusk, “Situation in Cuba,” *Senate Committees on Foreign Relations and Armed Services, 87th Congress, 2nd Session* 33 (1962).

⁵² *New York Times*, November 21, 1962.

the legal doctrines of maintenance of international peace and security and of self-defense. Each doctrine may be implemented by collective measures. Self-defense may be implemented by individual measures, and perhaps international peace and security may be protected through the same procedures.

At the present stage of the development of world institutions, it remains the duty of each state to determine for itself (although it may make this determination in a community forum) what conditions must exist for it to be secure. A state is therefore able to determine for itself what it regards as an improper invasion or unpermitted reduction of that essential condition of security. A state is also authorized, at least initially and in theory, to determine for itself the procedures whereby corrective action may be undertaken, and in this connection it may determine that it will be bound by collective procedures. On the other hand, each state has reserved from the application of collective procedures its inherent right of individual self-defense, and depending on the nature of the threat to a state's security, it may be obliged to determine for itself how it will go about reestablishing that requisite degree of security. It may be obliged to have recourse to immediate and unilateral self-help.

The means for maintaining or obtaining the requisite degree of security are theoretically, and perhaps, practically, unlimited. International law has sought to regulate the use of force, and additionally, as has been pointed out, has sought to assure to collective processes the maximum management of the use of force. However, when fundamental national interests are at stake, the seeming illogic of the employment of substantial force—general war—may not be persuasive. The alternative of limited war may also prove illusory. Nonetheless, at some point the demands of national security may require the use of force or coercion, and reason requires that it be proportionate to the anticipated benefits. Security, like law or history, is a seamless web. Therefore, challenges to it, in and from any dimension, including outer space, require the most searchingly intelligent responses which man is able to bring to bear on any question.

The range of man's interests in security requires attention not only to his need for protection. These interests must also take into account an affirmative awareness that the unilateral avoidance of destructive conduct, including violence, in the dimension of outer space may contribute to world security. For national abstention from violence or the threat of violence in or from space may result in reciprocal conduct on the part of other states. Unilateral avoidance of destructive violence and joint expectations respecting limitations on the use of force are capable of producing a condition of minimum public order

in outer space. The existence of such a condition can contribute materially to restraint in the use of outer space. The avoidance of reckless threats and provocative conduct may direct attention to the fact that national security is not exclusively the product of force.

In arriving at a means to promote the security of a state—either by collective or unilateral means—it is necessary to take into account values supportive of the national interest in addition to the central one of security. Such additional values include, but are not limited to those of proper respect for legal processes and institutions, protection of national interests through nonviolent means, the health and welfare of its citizens, the protection of cultural and spiritual progress, the maintenance of a viable economy, a wide distribution of dignity and respect, and a protection of learned traditions within an environment capable of producing rational change.

The means to promote such goals in addition to coercion include, among others, a continual enlargement of individual skills and knowledge, an enhanced resource reservoir capable of producing greater wealth and fuller employment, a dynamic and progressive science and technology, a more effective utilization of social and political capabilities, an extended national reputation resulting from a growth in prestige and respect, and, finally, more positive uses of the capabilities of international organizations, and in particular the United Nations.

Through the latter, for example, it may be possible for a state to demonstrate its willingness to make use of peaceful processes to resolve international disputes. In alluding to this use of the United Nations, Secretary Rusk stated in 1962, that one of the greatest strengths possessed by the United States in the post-Cuba crisis was that "we carry our purposes on our sleeve, and the purposes we carry are for peace within the framework of the United Nations kind of world community * * *." ⁵³

It has long been the policy of the United States to rely on the United Nations as a means for arriving at an acceptable regime for outer space. In 1960 Assistant Secretary of State Wilcox stated that "only the United Nations is able to cope with the complicated, political, legal, and technical problems involved in assuring the open and orderly conduct of space activities." ⁵⁴ As has already been suggested, a further modest beginning in this direction would be the initiation

⁵³ "An Hour with the Secretary of State," *CBS Reports*, November 28, 1962, 8.

⁵⁴ Wilcox, "The United Nations: Crisis and Opportunity," 43 *Department of State Bulletin* 512 (1960); Compare Secretary of State Herter, "United Nations Foreign Policy under the Eisenhower Administration," 44 *Department of State Bulletin* 146 (1961).

of verified inspection and control procedures for satellite launches.⁵⁵

There is general consensus that the United Nations will serve effectively as a means to minimize international tension, and even conflict, resulting from national activities in outer space. However, the chance of good success, particularly where the larger issues of security are involved, has been described as "highly improbable because the Great Powers would expect to forego prestige advantages, possible military advantages, and at least some degree of military privacy, if they internationalized the development of outer space."⁵⁶ Short of internationalizing the development of outer space, it is clear that important benefits have already resulted from cooperation between the two resource nations. But as Knorr has indicated, such cooperative benefits accrue when four conditions exist, namely, where there is a consensus that the space activity is primarily concerned with peaceful, i.e., nonaggressive and beneficial, purposes; where the activity is very expensive; where the activity is routine and lacking in prestige considerations; and where operational requirements, such as weather forecasting or television communications, require such cooperation.⁵⁷

Within the context of selecting either collective or individual processes in order to cope with the prior positioning by a state of a weapon of mass destruction in outer space or on a celestial body, international law offers little detailed guidance. It does, however, provide suitable insight into the question of whether recourse must be had to the principles of international peace and security or to self-defense. In either event it may be well to recall under such circumstances law has been described as a concession by force to reason. In the area examined here it would appear that reason would be well served by the avoidance on the part of states of tension creating situations. Recognition of this fact has undoubtedly contributed to the existence of the Moscow Treaty, 1963, and General Assembly Resolution 1884 (XVIII) of October 17, 1963.⁵⁸

⁵⁵ *Supra*, pp. 306-318.

⁵⁶ Knorr, "On the International Implications of Outer Space Activities," in Goldsen, ed., *International Political Implications of Activities in Outer Space* 151 (1960). Compare, Abt, *The Problems and Possibilities of Space Arms Control* 1-52 (1961).

⁵⁷ Knorr, *op. cit.*, 151.

⁵⁸ It will be recalled that in this Resolution the General Assembly unanimously called on all states "(a) To refrain from placing in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, installing such weapons on celestial bodies, or stationing such weapons in outer space in any other manner; (b) To refrain from causing, encouraging or in any way participating in the conduct of the foregoing activities." *U.N. Doc. A/RES/1884 (XVIII)*. Annex 13, *infra*, pp. 462-463.

C. PROCESSES TO INSURE THE REASONABLE USES OF OUTER SPACE

With the growing recognition on the part of states that a principle of law exists supporting the free and peaceful use of outer space, there has also come a demand that space activities and uses be controlled in such a way that states may enjoy the fullest benefits of the principle. At this time attention will be called to the extent to which international law provides processes for the regulation of space uses. Such processes will be considered under the heading of noncoercive (permissive) processes and coercive (also permissive) processes. However, before surveying these processes, it is necessary to examine analytically certain factors which are pertinent to the selection of such processes.

1. Factors to Be Considered in Selection of Processes

The world community, including its separate but component parts, must take into account both practical and legal considerations in arriving at decisions relating to the reasonable uses of outer space. It would be pertinent, for example, for a state to relate its response to the conduct of another state, which through fast and covert action had positioned in outer space or on a celestial body, on a relatively permanent basis, a major offensive missile threat capable of nuclear mass destruction. A wholly different response might be in order if the satellite were equipped with observational devices permitting it to scan and report both cloud cover and happenings taking place on or above the high seas or within a state. In the one case the use would very probably constitute a deliberate and extraordinarily significant modification of the existing world power structure—a power structure which at the present time rests upon an “uneasy equilibrium depending upon a highly tentative balance of terror for its success.”⁵⁹ On the other hand, observation, without more, fails to create a danger of overt harm. Rather, it provides a means of ascertaining the intentions of other nations, and hence, may contribute measurably to a condition of world stability.

a. Precise Nature of Facts

The precise facts to be taken into account with regard to ascertaining whether outer space is in fact being used for reasonable purposes are not different from the facts to be taken into account in the use of the high seas. Similarity in patterns of conduct has resulted in a similarity of legal status. Both, it has been suggested, follow the

⁵⁹ Christol and Davis, *supra* note 14, at 526.

concept of a *res communis omnium*, that is, both are open to reasonable use subject to reasonable controls.

The following constitute the major, but not necessarily all of the facts to be taken into account: as suggested above, the nature of harm, if any, to the maintenance of international peace, security, and self-defense; the precise nature and location of a given weapon or weapons; the comparative weapons capabilities and power structures of the contending nations (including their friends and allies); the physical location of the threatening space vehicle; the reality of the threat, if at all; the over-all nature of the political environment; the extent of implicit or express international agreement, including the existence of agreement, if any, on prelaunch registration, verification, and inspection of satellites; the extent to which resource and other states possess reciprocal interests and are motivated by the desire to achieve accommodations of conflicting interests; and the availability and effectiveness of alternate processes. These factors, as well as others, are constantly in motion, so that a perception of these considerations as well as their interpretation constitutes both an ongoing and grave national responsibility. When such factors as those enumerated are balanced against such imponderables as the prospect of achieving international (or regional) support for collective measures—or the supposedly somewhat more predictable unilateral responses of a single state—it becomes readily apparent that factual problems do play a very large role in determining whether or not a state may engage in a given use of outer space. Without unnecessarily pyramiding difficult factual considerations, it might also be noted that space uses cannot be separated from international attitudes toward a condition of general and complete disarmament. By reason of the fearsome capabilities of weapons of mass destruction situated in space, the policy maker who must determine the extent of reasonable use of outer space has grave responsibilities. Activities and processes in space, for better or worse, may very largely condition man's expectations as to future activities in other areas.

2. Noncoercive Processes

This classification is intended to describe a means of achieving a reasonable use of space in which the role of military force plays no part. This distinction is made in view of the fact that force, in its larger sense, may take many forms of which military force is but one instance. Permissive measures to insure that outer space is used for reasonable purposes include such pacific, collective, or unilateral, actions as political, economic, or scientific procedures and public

opinion. As means of achieving compliance with legal expectations they may be regarded as sanctions, but, as stated above, they do not involve the use of military force or coercion.

A means of expressing disapproval of state action and thereby endeavoring to induce a modification of state conduct has been to withdraw diplomatic recognition. This is an expression of disapproval employing political processes and involves legal consequences. At times it has been regarded as a prelude to war, but it need not be. Political disapproval may also find expression in a policy of nonrecognition.

Economic disapproval may take many forms. The best known are economic boycotts. This form of disapproval may be circumscribed by treaties and other agreements.⁶⁰

Occasionally, scientific measures have been employed to induce a state to modify its course of conduct. This has usually taken the form of nondistribution of scientific data acquired by one state and useful to another. This measure has been used rarely because of the facility with which other states may retaliate, and because of the common need for this kind of data.

Public opinion in a world of power politics may occasionally seem to be a slender reed upon which to place reliance in an effort to induce a state to conform to community expectations. Still, it is not without its influence, and there are those who honor it. This was seen by Gray who wrote that states take into account "the sanction arising from the opinion of civilized nations that the rules [of international law] are right, and that civilized nations are morally bound to obey them."⁶¹

a. *Legal Institutions and Activities*

Legal institutions, such as the United Nations, the International Court of Justice, and the Permanent Court of Arbitration at The Hague, are equipped to assist in determining the standards of reasonable use of outer space. Suitable *ad hoc* bodies may be created to serve this goal.

⁶⁰ According to Kunz "Non-military—economic, financial, diplomatic—sanctions, reprisals not involving the threat or use of military force, remain legal under the U.N. Charter. But the Bogota Charter of the Organization of American States also expressly forbids the use of coercive measures of an economic or political character to force the sovereign will of another state and obtain from it advantages of any kind." "Sanctions in International Law," *supra* note 36, at 332.

⁶¹ Gray, *The Nature and Sources of Law* 131 (2nd ed., 1927). Compare Root, "The Sanction of International Law," 2 *A.J.I.L.* 451 (1908).

The United Nations, through the Resolutions of the General Assembly, and particularly through the deliberations of the Committee on the Peaceful Uses of Outer Space, has already made great contributions to the development of a structured legal regime for outer space.⁶² It will continue to do so, particularly through the process of drafting a series of technical conventions dealing with such matters as liability and jurisdiction and return of space vehicles and personnel.⁶³ There is much support favoring the establishment of an office within the United Nations—either through the expansion of the Outer Space Affairs Section of the Secretary-General's Office—or, perhaps, by way of a new specialized agency, whereby greater international control might be exercised over activities in outer space. A primary function of such an office or agency would be to manage traffic control and also to engage in verified inspections and registrations of space launches.

The International Court of Justice may be used to determine the meaning of international legal concepts contained in customary and express international law. This may be accomplished either through litigious cases or by way of advisory opinions. Litigation between states as to the meaning of reasonable use of outer space would provide a most desirable process for the clarification of principles and rules of the emerging law of outer space. This would permit full use of the principles set forth in Article 38 of the Statute of the Court. A similar conclusion is attained if the problem were presented in the form of a request for an advisory opinion.

It should be noted, however, that in the past the Soviet Union has successfully avoided the status of a defendant before the Court. It is almost completely improbable that the United States would be able to maintain a litigious action against the Soviet Union before the Court in view of the latter's probable use of the contention that a space problem affected the Soviet Union's domestic jurisdiction. Although Article 36(6) of the Statute of the Court makes provision that the Court shall be entitled to resolve issues of jurisdiction, the United States in accepting the compulsory jurisdiction of the Court made a reservation permitting it to determine for itself what constitutes a matter of domestic jurisdiction. The reservation operates on a reciprocal basis. Therefore, it would be possible for the Soviet Union to claim the use of the United States reservation in order to

⁶² *Supra*, pp. 188-318.

⁶³ *Infra*, pp. 458-460, 463-470.

forestall adjudication of space problems. This reservation has been popularly known in the United States as the Connally Amendment.⁶⁴

In view of anticipated difficulties in clarifying the substance of space law through litigious processes, there remains the possibility that valuable judicial talent may be utilized through the process of advisory opinions.

The United Nations has provided the most effective forum yet conceived for the discussion and enlargement of space law principles. It may be assumed that in the future the Committee on the Peaceful Uses of Outer Space will continue to reflect the ongoing forces of customary international law, and will prepare drafts of principles and more detailed technical rules which will be presented to member states as resolutions, declarations, treaties, and conventions. Continued discussions and debates will provide great insight into both the direction which the law is taking and also the speed with which it is being assimilated into national conduct.

3. Coercive Processes

The spectrum of coercion ranges all the way from the slightest plus over zero to unlimited and unrestricted force encompassed in the concept of general war. It is generally agreed that the amount of coercion employed should be proportionate to the dangers actually faced or within the range of reasonable contemplation. Reasonableness depends upon the practical circumstances of a given time and place and may be measured generally in terms of the amount of international tension. The latter, of course, is the product of physical capabilities and national intent, and both can be measured in terms of express and implied conduct.

Such processes may be either national or international, e.g., individual or collective. They may be based on two principal and alternative legal theories, namely, the right to maintain international peace and security, and/or the inherent right of self-defense. As has been indicated above, the collective process is preferable and possesses great moral and practical value when the danger of harm is somewhat remote and the need for a response is not immediate, or at least, may be delayed. The unilateral response may be employed

⁶⁴ Hearings on S. Res. 196 Before a Subcommittee of the Senate Committee on Foreign Relations, 79th Cong., 2d. Sess. 1 (1946); 92 Cong. Rec. 10624, 10694-97; Christol, "The United States and Prospects for a World Rule of Law," 7 South Dakota Law Review 24 (1962); Preuss, "The International Court of Justice, the Senate, and Matters of Domestic Jurisdiction," 40 A.J.I.L. 736 (1946). Compare *Case of Certain Norwegian Loans: I.C.J. Reports, 1957*, 9.

when there is an immediate and proximate threat of substantial harm.

Based on the requirements of proportionality and taking into account the conclusions previously arrived at that peaceful, i.e., non-aggressive and beneficial, uses of outer space are reasonable and therefore legal,⁶⁵ it is suggested that the following protective uses may be employed. Let us assume that the fact situation is one in which one state has placed an uninspected and unregistered satellite into earth orbit or where the nature and capabilities of the satellite are unknown to the subjacent state. It is suggested that the subjacent state might proceed in the following sequence to protect its legal rights.

First, it might engage in surveillance of the orbiting satellite from positions either on the surface, in the airspace, and in outer space. In the course of such surveillance it might approach the satellite in order to make visual or photographic or other mechanical forms of inspection. At this point harmful physical contact would be avoided. This could be based on the existence of a reasonable safety zone. Second, if the surveillance were to disclose facts indicating that the presence or purpose of the satellite involved a restricted amount of danger to the inspecting state, then the latter might cause the offending space vehicle to modify its course. This assumes that modification of direction were in fact possible, that the modification of course would reduce or minimize the contemplated danger, and that the inspected satellite would agree to such procedures. Third, if due cause were shown to the inspecting nation and if the inspected satellite had failed to modify its course upon request, then, if the condition were sufficiently grave, the inspected satellite might be taken into possession or intercepted by the complaining state.

At this point several options would be open to the respective states. If the vehicle were proven to be in reasonable use, it might be released to continue in orbit, or if this were not physically possible, it would be safeguarded by the inspecting state until it could be returned safely to the launching state. If, on the other hand, the space vehicle were in fact engaged in conduct unreasonably dangerous to the existence of the inspecting state, it might be rendered inoperative through destruction or other processes. In any event, personnel on board would be protected and repatriated to the national state.⁶⁶

⁶⁵ *Supra*, pp. 263-319.

⁶⁶ Goedhuis, after analyzing this problem, has concluded that "It is difficult to deny to a state the right to destroy a satellite which it believes presents a threat to the security of the state." He consulted the views of such writers as

The foregoing procedures, it is submitted, are preferred processes when there is an intention that general war should not result. This condition, short of general war, might result from the use of such processes if at the time of launch it is understood that a state has a reasonable right to assure itself that the presence of an orbiting satellite is not designed to cause it great and irremedial harm. However, any process of inspection, no matter how reasonable and proportionate to the security needs of a state, may in fact, though needlessly, be made the basis for a general war. An early express agreement among resource states on detailed security procedures in space would greatly ameliorate this condition.

Much of the problem would be resolved by general acceptance of the view that the presence of an observational type satellite conforms to the standards of reasonableness. However, until it becomes possible to conduct positive identification of vehicles and objects in orbit or until suitable verification, inspection, and registration procedures have been established, the problem will continue to vex states.⁶⁷

There is a growing consensus among writers that it is reasonable for states to use all available scientific and technological processes to ascertain the purposes and capabilities of transiting satellites. This is supported by the realization that space vehicles and devices may be equipped to achieve a great variety of uses. Thus, Crane has suggested postlaunch practices, which may be necessary in the inter-

Kittrie, Quarles (Deputy Secretary of Defense), and Becker (Legal Adviser to the Department of State) in arriving at the foregoing conclusion. Goedhuis noted that Kittrie held that if a reconnaissance satellite threatens national security it might be destroyed or caused to malfunction and that Becker was of the view that something short of armed attack would justify national security measures. Quarles, on the other hand, urged that the mere presence over the United States of a Soviet reconnaissance satellite need not be considered to be objectionable. Goedhuis, "Some Trends in the Political and Legal Thinking on the Conquest of Space," 9 *Netherlands International Law Review* 130-131 (1962). It has been urged, since at the present international law does not prohibit reconnaissance from outer space, that the intentional destruction of a peaceful reconnaissance satellite "would appear to be proscribed by the Charter as a 'use * * * of force * * * inconsistent with the purposes of the United Nations.'" The same author has concluded that "It would appear * * * that the doctrine of self-defense is too narrow to support such action." "Legal Aspect of Reconnaissance in Airspace and Outer Space," 61 *Columbia Law Review* 1082-1083 (1961).

⁶⁷ It has been stated in connection with scientific and military observation satellites that "it is not only difficult to tell these kinds of observation satellites apart, it is impossible to do so." Katz, "The Technological Environment and its Prospects," in Goldsen, ed., *International Political Implications of Activities in Outer Space* 14 (1960).

ests of national security, namely, acquisition, tracking, identification, neutralization, capture, and destruction.⁶⁸ Kittrie has urged that if an observational satellite threatens national security it may be destroyed or caused to malfunction.⁶⁹

The Davies Draft Code of Rules on the Exploration and Uses of Outer Space, in taking into account the security needs of states, has made provision for the diversion or destruction of space vehicles under certain circumstances. The draft accepts the view that no spacecraft may at any stage of its flight enter the airspace of another state without the consent of the latter, except in the course of making an emergency landing. In the event of any other entry, the subjacent state may "divert or destroy any spacecraft which enters its airspace without * * *" the prescribed national consent.⁷⁰

The term "interception" has also been used. Thus, Cooper has asked, "is it permissible for a State to intercept in outer space a foreign spacecraft known to be armed with a nuclear warhead and thereby constituting a source of potential attack on any State flown over?"⁷¹ General Gavin urged as easily as 1958, the development of a "satellite interceptor."⁷² Antisatellite operations could involve the "destruction or neutralization of a space object and this is far easier if one shoots from the orbital plane of the space object, approximately under the satellite, even in the case of a maneuverable satellite."⁷³

It may be expected that common practices now current on the high seas and in the airspace would be available in the identification of space vehicles. Under the law of the sea, the vessel of one state may approach the vessel of another state in order to ascertain its identity,⁷⁴ although "warships on the high seas have complete immunity from the jurisdiction of any State other than the flag State."⁷⁵ Under certain circumstances a naval vessel may challenge, board, search,

⁶⁸ Crane, "Law and Strategy in Space," 6 *Orbis* 283 (1962); compare Crane, "Soviet Attitude Toward International Law," 56 *A.J.I.L.* 704-706 (1962).

⁶⁹ Kittrie, "'Aggressive' Uses of Space Vehicles—the Remedies in International Law," *Fourth Colloquium* 198-219 (1963).

⁷⁰ *Draft Code of Rules on the Exploration and Uses of Outer Space* 14 (n.d.).

⁷¹ Cooper, *supra* note 17, at 53.

⁷² Gavin, *supra* note 46, at 224.

⁷³ Cagle, "The Navy's Future Role in Space," 89 *United States Naval Institute Proceedings* 91 (January 1963).

⁷⁴ *The Marianna Flora*, 11 *Wheaton* 1, 3 (1826); Brittin and Watson, *International Law for Seagoing Officers*, 2nd ed., 101 (1960).

⁷⁵ Article 8(1), *Convention on the High Seas*, U.N. Doc. A/CONF.13/L.53 and Corr. 1.

and inspect the papers of a nonnational vessel.⁷⁶ Capture may result when there has been a serious violation of international law by a vessel on the high seas.⁷⁷

Approach to vessels may be accomplished by other naval vessels or by aircraft, and in the latter instance may be quite close. In 1960 the Soviet Union protested the "buzzing" of its vessel the "Vega" by United States public aircraft on and over the high seas. The "Vega" although ostensibly a fishing trawler, was equipped with extensive electronic equipment and had pursued a lengthy intelligence mission along the eastern coast of the United States. In rejecting the Soviet protest concerning the close approach to the "Vega" by United States aircraft, which protest was described as being "without foundation," the United States noted that "in such circumstances there is every reason for establishing the identity of such a vessel and the nature of its activity."⁷⁸ In recent years Soviet aircraft have also flown at low altitudes over United States naval vessels on the high seas.

In conclusion, it should be noted that the foregoing recitation of coercive processes available to states, either collectively or individually, are alternative rather than exclusive processes. States desiring to keep the peace and to achieve a minimum amount of world order may readily achieve this goal in outer space by exercising self-restraint in positioning weapons of mass destruction in that environment.⁷⁹ Further, they may have recourse to all of the noncoercive processes which have been suggested. Failing that they may employ, where the challenge to national security is extreme, the proportionate coercive processes which have been described. However, in the formulation of national space policy, every nation should take into account the possibility that its decision to make unreasonable uses of outer space may deny to all the fullest realization of the resources and potentials of outer space. It can be predicted that space resource states will not regard international law as irrelevant in arriving at policies seeking to maximize the peaceful and beneficial uses of outer space. A wide range of sanctions, depending on the nature of transgression, are recognized by international law. The key to their use is the doctrine of reasonableness as influenced by the quality of the danger.

⁷⁶ Articles 22 and 23, *Convention on the High Seas*, *ibid.*

⁷⁷ Schwarzenberger, *A Manual of International Law* 126 (4th ed. 1960); McDougal and Burke, *The Public Order of the Oceans* 885-893, 806-823 (1962).

⁷⁸ "United States Note of July 21, 1960," 43 *Department of State Bulletin* 213 (1960); compare, Brownlie, *supra* note 13, at 247-254.

⁷⁹ By reason of General Assembly Resolution 1884 (XVIII), 1963, there appears to be specific international recognition of the duty to avoid such space conduct. Annex 13, *infra*, pp. 462-463.

CHAPTER VI

LEGAL PROBLEMS ARISING FROM THE REASONABLE USES OF OUTER SPACE

Even outer space is finite. Like the oceans it is subject, in varying degrees, to sharable use. In the course of the use and exploration of outer space and celestial bodies for peaceful purposes, a need has arisen to establish the range of peaceful uses as well as a structured legal regime capable of dealing with disputes that may grow out of such uses. It is the purpose of this Chapter to investigate several of the major legal issues which must be resolved if disputes over ways of using outer space and celestial bodies for peaceful, i.e., non-aggressive and beneficial, purposes are to be kept to a minimum.

Several areas have been selected because of their importance to the reasonable uses of outer space. They include the problem of international responsibility and liability for damages for harms resulting from the use of space vehicles and devices, possessory rights over spacecraft, assistance to and return of space vehicles and personnel to the launching or operating authority, allocation of radio facilities to space users, nationality of space vehicles, and jurisdiction over space disputes.

The magnitude of these subjects may be affirmed through a recitation of some of the items which have been introduced into outer space. These include, but are not limited to, rockets, missiles, satellites, space stations or platforms, orbital laboratories, nuclear substances by way of explosions or as power for generators, copper needles, sodium vapor, water, such electrical impulses as radio, television and radar signals, and laser and maser beams. These instrumentalities and materials have had for their purposes the accumulation of scientific data regarding the nature of the universe, data relating to the functioning of many kinds of spacecraft, and a great variety of hybrid data. Acquisition of data will lead to improvement in weather meteorology and forecasting, geodetic and navigational facilities, scientific investigations, observational procedures, communications media, resource exploitation, transportation, and to a more complete understanding of all of the less tangible scientific, social, and political uses of outer space.

Space problems will arise from the conduct of those entities engaged in launching, orbiting, and return procedures. The conduct may be by a state, groups of states, international organizations, or even private business entities.

Through the formulation of specific rules, it may be possible to achieve a minimum interference with the reasonable uses of outer space. Further, by obtaining tentative answers to these issues, there will be greater insights into and a more substantial clarification of the body of outer space law. In particular, it will be possible to add meaning to the concept of the peaceful uses of outer space.

A. INTERNATIONAL RESPONSIBILITY AND LIABILITY FOR HARM AND DAMAGES

1. The Nature of the Problem

The relationship of individuals, governments, and international organizations to harm resulting from the practices and procedures of space vehicles has been analyzed by many commentators. They have stressed the possibility of damage occurring on the surface of the earth—either on land or at sea. Such damage may also occur in the airspace and in outer space. It may result from accident, mistake, or from intentional conduct. According to Haley:

Today, in spite of the extraordinary technological advances which have been made, a launched rocket vehicle occasionally descends to earth far from the spot chosen as its destination. Inevitably, the ever-increasing range attainable by rocket vehicles will enhance the probability that such mishaps will not be uncommon, since the greater distance will magnify the result of any error or defect in the vehicle's guidance system. If a vehicle or parts of a vehicle should fall to earth causing property damage and personal injury, who will be liable for such damage and to what extent?

When a vehicle weighing thousands of pounds carrying great quantities of the most volatile fuels known to man leaves the earth it depends entirely for its guidance on an intricate system of thousands of precisely designed and engineered parts, both in the missile itself and on the ground. The slightest miscalculation in the design, manufacture, or function of any single part could result in disaster. Should disaster occur what would be the basis of liability on which those injured could claim compensation? Are there any analogies from which we can draw an answer?¹

¹ Haley, "Space Vehicle Torts," 36 *University of Detroit Law Journal* 294 (1959). See also Haley, *Space Law and Government* 233-273 (1963). Compare, McDougal, Lasswell and Vlasic, *Law and Public Order in Space* 613-620 (1963).

Major harm, bordering on limited disaster, some day may—and probably will—result from the peaceful employment of satellites. The nature of the harm may differ from possible nuclear, bacteriological, or chemical accidents. Nonetheless, within an impact area the dangers may be of significant magnitude. Nuclear energy has been considered as the propulsion system for the Rover type satellite. The Transit-4A satellite launched by the United States on June 29, 1961, was equipped with an experimental nuclear device (developed by the Atomic Energy Commission) which continues to generate electricity for navigational transmitters. The Transit-4B also used nuclear powered generating equipment. Nuclear energy is considered by many to be a natural tool for the exploration of outer space.²

Disaster may also threaten from satellites and missile launches because of the properties of nonnuclear propellants. It has been stated that many such propellants possess extremely toxic qualities, that there is little knowledge about antidotes, and that despite safety measures, there remains the possibility that serious injury may result by reason of an accident at time of launch.³

Harm may also result from the uncontrolled return to earth of space vehicles and devices, either in the form of the launched vehicle or as fragments resulting from collision or in consequence of partial combustion caused by transiting through heavy atmosphere.⁴ There is a pressing need to provide for both safety of operation and to create legal rights and remedies ready for use after harms have resulted. This responsibility confronts both national and international policy makers.

² Branch and Connor, "Nuclear Safety in Space," 19 *Nucleonics* 64-68 (April 1961). Connor, "Aerospace Nuclear Safety," 31 *Aerospace Medicine* 797-806 (October 1960). Compare, Libby, "Atomic Energy and Space," in Ramo, ed., *Peacetime Uses of Outer Space* 188, 190-191 (1961). The Snap-3 generator provides isotope power for satellites and has a life expectancy of about 40 years. Hardy, "Nuclear Liability: The General Principles of Law and Further Proposals," 36 *Brit. Yb. Int'l L.* 223 (1960).

³ Reeves, *New York Times* (Western ed.) February 5, 1963. Major Reeves has served as Chief of Experimental Toxicology and Biokinetics of the United States Air Force School of Aerospace Medicine.

⁴ For an account of the surveillance and recovery in Manitowoc, Wisconsin, on September 5, 1962, of a metal object weighing approximately twenty pounds constructed of alloy steel and which had been in outer space for a considerable period of time, one may consult the statements of the United States representative to the U.N. Committee on the Peaceful Uses of Outer Space on September 14, 1962. The tender of this piece of Sputnik IV to the Soviet delegate was rejected at that time. However, later at the request of the Soviet government it was turned over to their U.N. mission. The United States, prior to the return of the material, had conducted scientific tests to determine its composition. *U.N. Doc. A/AC.105/PV.14, 56-60.*

It is true, as a careful report has indicated, that the role of law may not serve to diminish the physical hazards of disastrous accidents. But it is "largely the law, supplemented by private arrangements such as insurance, that determines whether, when and to what extent the victims will be compensated and how the burden of compensation will be distributed among governments, industry and insurers. The problem of devising fair and practicable means of compensating the victims and distributing financial losses is in large measure a legal one; if accidents occur in a foreign country, it becomes in part a political and diplomatic problem as well."⁵

At the present there is a need for a threefold approach to the protection of persons and property (both real and personal) from space related torts, whether accidental or intentional. In the first place, the resource states must enact suitable laws providing adequate protection to those who may suffer injury. Secondly, nations generally will benefit from entering into express international agreements providing for national responsibility for such harms. Such agreements would of necessity have to make suitable provision for the torts of a state, of groups of states, for those of private persons, and for international organizations.⁶ Thirdly, after international standards have been

⁵ *Financial Protection Against Risks of Major Harm in Government Programs* 1 (March 1963). Compare, *International Problems of Financial Protection Against Nuclear Risk* 1 (1959). If recovery were sought in the national courts of a country one legal problem might be the recognition of such a judgment in the courts of another state. See Nadelman, "Ways to Unify Conflicts Rules," in *De Conflictu Legum*, editors, *Netherlands International Law Review* 354-357 (1962).

⁶ On December 24, 1963, the General Assembly of the U.N. unanimously adopted Resolution 1962 (XVIII), which contained, among others, the following declarations:

5. States bear international responsibility for national activities in outer space, whether carried on by governmental agencies or non-governmental entities, and for assuring that national activities are carried on in conformity with the principles set forth in the present Declaration. The activities of non-governmental entities in outer space shall require authorization and continuing supervision by the State concerned. When activities are carried on in outer space by an international organization, responsibility for compliance with the principles set forth in this Declaration shall be borne by the international organization and by the States participating in it.

8. Each State which launches or procures the launching of an object into outer space, and each State from whose territory or facility an object is launched, is internationally liable for damage to a foreign State or to its natural or juridical persons by such object or its component parts on the earth, in air space, or in outer space.

For the entire Resolution, see Annex 4, *infra*, p. 450-452.

established by express international agreement, there will be a need to conform national laws to these standards.⁷

In the United States, existing legislative enactments have failed to make provision for any more than nominal damages on the part of the national government for extra-hazardous space activities, which are carried on at the instance of the government, and which may cause great harm to life and property. The 1963 study prepared by the Legislative Drafting Fund of Columbia University for the National Security Industrial Association has indicated that a member of the public in the United States would have to proceed for redress of injuries by way of law suit sounding in tort. It added:

The outlook for injured members of the public in the wake of a catastrophe is uncertain: apart from the problems of proof faced by plaintiffs in any tort action, to victims of a catastrophe special difficulties would be presented in identifying the actor for the injury, proving his liability in a lawsuit, and then finding sufficient assets from which a judgment could be satisfied.

The United States Government would, of course, possess sufficient assets to satisfy judgments arising out of any but the most cataclysmic of accidents. However, even though the programs under consideration [including most space activities] are by definition governmental programs, there is considerable doubt that an injured member of the public will be able to recover damages from, or even to sue, the government.⁸

Nations have a deep interest in the protection of their nationals from harm arising from distant places. It has been urged that the ultimate ascertainment of responsibility for compensation remains a domestic matter.⁹ However, as noted above, by international agreement states may arrive at standards which can be implemented and enforced in municipal law. Such problems may also be referred to international judicial bodies.

Factors to be considered at both the national and international level endeavoring to protect those likely to suffer harm include: suits against a government, sovereign immunity of government, suits

⁷ Quadri, "Droit International Cosmique," 98 *Recueil des Cours* 588, 589-592 (1959).

⁸ *Financial Protection*, *supra* note 5, at 7, 10. Compare, Haley, *supra* note 1, at 299-300, 303-314; Simeone, "Space—A Legal Vacuum," *Military Law Review*, Pam. 27-100-16, 51 (April 1962); McCollum, "Tort Aspects of Space Technology," 8 *Cleveland-Marshall Law Review* 292 (1959).

⁹ U.N. Doc. A/AC.105/C.2/SR.22, 14. The view was expressed by the representative of France.

against contractors and suppliers, protection through insurance coverages, liability of a state, possible liability of a state for private activity when authorized, liability of associations of states, liability of international organizations, procedures for pursuing claims, and legal bases for liability, including nuisance,¹⁰ negligence,¹¹ fault,¹² and strict or absolute liability.¹³

2. Deliberations at the United Nations

Efforts at the United Nations to establish detailed rules of liability for space vehicle accidents, including accidents in outer space, have considerably clarified expectations as to acceptable space behavior. As early as 1959, the United Nations *Ad Hoc Committee on the Peaceful Uses of Outer Space* suggested that the subject of liability for injury or damage caused by space vehicles was one susceptible of priority treatment. It put forward the following subjects for legal analysis and consideration:

First of all there is the question of the type of interest protected: that is, the kind of injury for which recovery may be had. Second, there is the question of the type of conduct giving rise to liability: should liability be without regard to fault for some or all activities, or should it be based upon fault? Third, should a different principle govern, depending on whether the place of injury is on the surface of the earth, in the air space or in outer space? Fourth, should liability of the launching State be unlimited in amount? Finally, where more than one State

¹⁰ Haley, *supra* note 1, at 294.

¹¹ *Ibid.*, 295.

¹² This was mentioned by the British representative at the United Nations as a possibility among others. *U.N. Doc. A/AC.105/C.2/SR.17*, 8-9. To the same effect, *U.N. Doc. A/AC.105/C.2/SR.25*, 5. See Verschoor, "The Responsibility of States for the Damage Caused by Launched Space-Bodies," *First Colloquium* 103 (1959).

¹³ Cooper, "Memorandum of Suggestions for an International Convention on Third Party Damage Causes by Space Vehicles," *Third Colloquium* 141; *Legal Problems of Space Exploration, A Symposium* 680. Cooper distinguished between liability in space and on the ground. Mankiewicz, "The Regulation of Activities in Extra-Aeronautical Space, and some Related Problems," 8 *McGill Law Journal* 209 (1962); Haley, *supra* note 1 at 294; Mankiewicz, "De l'Ordre Juridique dans l'Espace Extra-Aeronautique," 5 *Annuaire Francaise de Droit International* 142 (1959); Beresford, "Liability for Ground Damage Caused by Spacecraft," 19 *Federal Bar Journal* 254 (1959); *Legal Problems of Outer Space, A Symposium* 552; Simeone, *supra* note 8, at 51; Verschoor, *supra* note 12 at 103; Hingorani, "Damage by Satellite," 30 *University of Kansas City Law Review* 216-218 (1962).

participates in a particular activity, is the liability joint or several?¹⁴

The discussions at the United Nations have proceeded on the assumption that international liability for mishaps involving space vehicles is governed by international law and the Charter. In draft proposals submitted by the United Kingdom,¹⁵ the United States,¹⁶ and the Soviet Union,¹⁷ this point has been accepted. The United States and the United Kingdom have taken the view that space activity may also be governed by other international agreements. Proposals dealing with international liability have also been submitted by Belgium.¹⁸ The many proposals culminated in the adoption of Resolution 1962 (8) (XVIII) on December 24, 1963.

The importance of the various proposals, the unanimous Resolution of the General Assembly, and national views as to acceptability of stated principles require a detailed analysis. In the first place, it should be noted that an effort was made by the representative of the United States to summarize before the legal subcommittee of the U.N. Committee on the Peaceful Uses of Outer Space, the conclusions arrived at in that body. In April 1963, he stated that in connection with the question of "liability for space vehicle accidents, there was general agreement that launching authorities should be held internationally liable for injuries or damage on land, on sea, and in the air caused by space vehicles for which they were responsible."¹⁹ This is a carefully qualified statement, but it does suggest the existence of a legal duty on the part of a state, international organizations, and associations of states. It also suggests the responsibility of such entities for activities carried on with their permission by private persons. It was pointed out that "There was also a consensus of opinion that such liability should be incurred without proof of fault."²⁰ It will be noted that no reference was made to liability

¹⁴ U.N. Doc. A/4141, 23-24, Annex 20, *infra*, p. 472.

¹⁵ U.N. Doc. A/C.1/879, Annex 18, *infra*, p. 469.

¹⁶ U.N. Doc. A/C.1/881, Annex 10, *infra*, p. 459.

¹⁷ U.N. Doc. A/AC.105/C.2/L.6, Annex 16, *infra*, p. 466.

¹⁸ U.N. Doc. A/AC.105/C.2/L.7, Annex 17, *infra*, p. 468.

¹⁹ U.N. Doc. A/AC.105/C.2/SR.16, 3-4. The United States recognized this principle again in September 1963. U.N. Doc. A/AC.105/PV.20, 18.

²⁰ *Ibid.*, 4. The Australian delegate subsequently stated that there was "complete agreement in broad principle that a State launching a space vehicle should be internationally liable, without fault, for injury, loss or damage caused by the vehicle on the earth or in the air space." U.N. Doc. A/AC.105/C.2/SR.23, 3. Compare, Meyer, "Legal Problems of Outer Space," 28 *The Journal of Air Law and Commerce*, 344-346 (1962); Lyon, "Space Vehicles, Satellites, and the

for accidents occurring in outer space. The United States, by accepting General Assembly Resolution 1962 (8) (XVIII), has thereby agreed to a space law principle for outer space as well as for land, sea, and air accidents and events.

The United States, at the close of 1962, had put forward two proposals on the subject of liability. The first, dated September 11, 1962, contained specific rules, which if adopted—with modifications—would provide an adequate legal regulation of the problem of liability.²¹ The second, dated December 8, 1962, was broadly stated and somewhat limited in scope. The latter in Article 6 provided: "A State or international organization from whose territory or with whose assistance or permission a space vehicle is launched bears international responsibility for the launching, and is internationally liable for personal injury, loss of life, or property damage caused by such vehicle on the earth or in air space."²²

The United States representative, Mr. Meeker, examined the import of Article 6 before the legal subcommittee on April 24, 1963. He stated that the provision for international responsibility "covered the possibility of a Government enlisting the help of a private corporation or firm, which it might authorize to carry out activities in space, subject to continuing Government supervision."²³ He noted that pursuant to specific United States legislation, namely, the Communications Satellite Act of 1962, there had been acceptance of the principle of national responsibility for national space activities. Since some space activities have been carried out under private auspices, this reference was intended to reassure a few states which have been of the opinion that international space activities should be conducted only by states. This restrictive position is no longer advanced by any state, as illustrated by the unanimous vote given to General Assembly Resolution 1962 (5) (XVIII).²⁴

Mr. Meeker stated that "The first part of the principle in the United States draft was designed to show the international responsibility of any Government from whose territory or with whose assistance or permission space projects were undertaken. The second

Law." 7 *McGill Law Journal* 283-284 (1961); *Financial Protection*, *supra* note 5, at 70-86; Cooper, Verplaetse, Beresford, von Rauchhaupt, *Third Colloquium* 133-136; Beresford and Yeager, "Survey of Space Law," *Committee on Astronautics and Space Exploration*, 86th Cong., 1st Sess., 22-26 (1959).

²¹ U.N. Doc. A/AC.105/L.5; U.N. Doc. A/5181, Annex 9, *infra*, p. 458.

²² U.N. Doc. A/C.1/881, Annex 10, *infra*, p. 459.

²³ U.N. Doc. A/AC.105/C.2/SR.20, 12.

²⁴ Annex 4, *infra*, p. 450.

part of the principle stated the idea of financial liability, which was also included in paragraph 11 of the Soviet draft. The United States draft, however, was more precise since it specified what types of injury and damage were envisaged and said that responsibility existed for such damage or injuries on the earth or in air space.”²⁵ He noted that it would be necessary to establish a different rule for outer space because of the difficulties involved in applying the doctrine of absolute liability in that dimension.²⁶

The United States has maintained that intricate legal problems are involved in the launch, use, operation, and return of space vehicles, and that an express international agreement is the preferred process for coping with international rights and duties. The scope of legal liability may depend on many variables. These include, for example, the launch by one country of a space vehicle owned by another country, the launch by one country of a space vehicle in the territory of another country, and the cooperative launch by two or more countries in a third country of a vehicle owned by a fourth country. The variables are indeed wide.²⁷

The United States has also sought specific agreement as to the procedures to be employed in the presentation of claims and as to the forum where a state might obtain an interpretation or application of such a convention. With this in mind, the United States submitted a draft proposal on liability for space vehicle accidents on September 11, 1962. The scope of this draft was limited to personal injury and loss of life or property damage occurring on land, sea, or in the air. It recognized that states and international organizations responsible for the launching of space vehicles should be liable internationally for resulting injury, loss, or damage. It accepted the rule of absolute liability for this kind of harm on the part of the launching entity, but noted that “the degree of care which ought reasonably to have been exercised by the person or entity on whose behalf claim is made might properly be taken into account.”²⁸

²⁵ *Ibid.* The Soviet draft appears *infra*, p. 466, Annex 16.

²⁶ *Ibid.* Acceptance by the United States of Resolution 1962 (8) (XVIII) has signified acceptance of a single rule for earth, airspace, and space situated and damages.

²⁷ The representative of the United Kingdom has called attention to the need for a careful analysis of these issues, and has said: “Various combinations of interests might therefore be involved in an outer space project and one should not think only in terms of a State which owned both the launching apparatus and the space vehicle.” *U.N. Doc. A/AC.105/C.2/SR.25*, 3.

²⁸ *U.N. Doc. A/AC.105/L.5*; *U.N. Doc. A/5181*, Annex 9, *infra*, p. 458.

The United States draft further suggested that there was no need for a claimant to exhaust local remedies prior to filing a claim, noted the applicability of the concept of laches, and referred disputes "relating to the interpretation or application of the international agreement on liability in the absence of agreement between the States concerned upon another means of settlement" to the International Court of Justice. Finally, presentation of claims was to be accomplished internationally by dealing with the state or states or international organization responsible for the launching of the vehicle which caused the injury.²⁹

The representative of the United Kingdom also held the view in May 1963, that there was general agreement among the members of the legal subcommittee that "liability should be absolute."³⁰ It was pointed out that it would be possible for several states and international organizations, as well as private persons, to engage in cooperative space efforts, and that this presented problems affecting the assignment of liability. Several possible criteria were mentioned for the determination of liability, such as responsibility for launch, effective control over subsequent operation, and ownership. However, it was suggested that the need to arrive at a rule for the apportionment of liability would not modify the need to establish a rule of absolute liability.³¹

The British representative, after noting that the United States favored imposing liability on the launching entity, observed that it was "doubtful whether that formula would work satisfactorily in the case where an international organization launched a space vehicle for a State which was not a member of the organization, but the organization itself had no control over the subsequent operation of the vehicle."³² The United Kingdom also pointed out that the United States view (that liability was to be assigned against the state of launch), might not be appropriate where the state whose "territory was used for the launching was merely providing a convenient launching site and was not in any way concerned with the vehicle's subsequent operation."³³ These comments emphasized the possibility

²⁹ *Ibid.* If such matters were to come before the World Court for adjudication, the claim would be presented by a nation-state or perhaps by an international organization.

³⁰ U.N. Doc. A/AC.105/C.2/SR.25, 5.

³¹ *Ibid.*

³² *Ibid.*, 4.

³³ *Ibid.*

that operation as well as launch ought to be weighed in determining liability.³⁴

The British representative also called to the attention of the legal subcommittee the language of paragraph 11 of the Soviet statement of general principles, which made provision that a state undertaking activities in outer space bore international responsibility for such conduct.³⁵ It was thought by the British representative that such a formula could be construed to mean that a launching state was responsible even when it had no control over the vehicle's subsequent operations or where its participation was limited to making its territory available for a launch. It was also pointed out by the British delegate that the Soviet formulation might exclude an international organization from responsibility for space vehicle accidents, but that the draft could be interpreted to mean that "the States composing the organization should always be held to be directly liable for any injury or damage caused by a space vehicle."³⁶ It was noted that *prima facie* it appeared that the international organization might be liable in the first instance, but that under the constitution of any international body it might be possible to provide that the members would be obliged to discharge the liability of the organization.

The inadequacy of the Soviet draft principle, despite its recognition of the need for a structured legal regime in outer space, may be observed by comparing it with the United States and Belgian proposals.

³⁴ The French representative also noted that space activities might include launch, operation, and use by states or associations of states. In his view it was essential that such entities "should accept liability for the injuries which might arise from those activities." *U.N. Doc. A/AC.105/C.2/SR.22*, 14.

³⁵ The Soviet draft, like the British draft, has dealt only with broad principles. The Soviets have advanced the view that "A State undertaking activities in outer space bears international responsibility for damage done to a foreign State or to its physical or juridical persons as a result of such activities." *U.N. Doc. A/AC.105/C.2/L.6*. The British draft has suggested that space activity should be conducted "with due regard to the interests of other States." *U.N. Doc. A/C.1/879*, Annex 18, *infra*, p. 469.

³⁶ *U.N. Doc. A/AC.105/C.2/SR.25*, 4. The Soviet representative in September 1963, retreated from earlier Soviet proposals which would have sought to restrict space activities to states. In commenting on the conduct of activities in space by private companies, under the supervision or control of a government, it was stated: "The Soviet delegation considers it essential to point out that in this field it would be possible to consider the question of not excluding from the declaration possibility of activity in outer space by private companies, on the condition that such activity would be subject to the control of the appropriate State, and the State would bear international responsibility for it." *U.N. Doc. A/AC.105/PV.22*, 37. Compare Resolution 1962 (XVIII).

The Belgian delegation to the United Nations submitted a detailed analysis dealing with the Unification of Certain Rules Governing Liability for Damage Caused by Space Vehicles.³⁷ This draft dealt systematically with five phases of the problem: definitions, designation of states subject to liability, nature of the liability, extent of liability, and procedures for bringing action for liability.

The Belgian proposal made provision for extending compensation for damage to movable and immovable property and to natural and legal persons. Damage was understood to mean any loss for which compensation may be claimed under the national law of the injured person, "including judicial and legal costs and interest."³⁸ The proposal made no provision for damage "caused on the territory of the State where the launching of the device or devices takes place, the State whose flag the device or devices fly or the State or States claiming ownership or co-ownership of the device or devices."³⁹ Territory of a state was defined to include only land areas, territorial and adjacent waters, and ships flying its flag and aircraft registered to it. Presumably the proposal would cover events taking place on the high seas, in non-national airspace, and in outer space.

Pursuant to Article 2 of this proposal, liability would be limited to a state or groups of states, and only a state might be a claimant although the latter would be permitted to act on behalf of injured nationals or residents. The claimant state would be authorized to proceed against the state on whose territory the launch took place, or the state whose flag was flown, or the state or states claiming ownership or co-ownership of the space device. In this connection it was provided that there could not be "joint liability or solidarity."⁴⁰

The following provision was made as to liability:

The occurrence of the event causing the damage shall entail an obligation to give compensation once proof has been given that there is a relationship of cause and effect between the damage, on the one hand, and the launching, motion or descent of all or part of the space device on the other hand.

The presence or absence of a relationship of cause and effect shall be determined in accordance with the national law of the person injured.⁴¹

³⁷ U.N. Doc. A/AC.105/C.2/L.7; U.N. Doc. A/AC/105/12; Annex 17, *infra*, p. 468.

³⁸ *Ibid.*

³⁹ *Ibid.*

⁴⁰ *Ibid.*

⁴¹ *Ibid.*

With regard to the extent of liability the proposal called for the application of the "ordinary law of the country of the person injured."⁴²

Claims for liability were to be brought initially through diplomatic channels, subject to a statute of limitations of one year. If the state against which the claim had been presented failed to arrive at a "decision considered satisfactory by the plaintiff State within six months, the latter shall be entitled to take the claims for compensation before the International Court of Justice."⁴³ The proposal established a six months statute of limitations applicable to these actions before the World Court.

The Belgian delegate to the legal subcommittee explained the proposals in May 1963. He asserted that damage occurring on the territory of the launching state or on the territory of the flag state or on that of the state or states claiming ownership of the device was not of an international character. In this connection he noted that "the States concerned would have to settle any problems that arose through bilateral and not multilateral channels."⁴⁴

It was explained that the Belgian proposal related to collisions between space devices, and apparently also between such devices and aircraft, for it was stated that "his delegation did not accept the idea of a space boundary and thought that space law should apply to space devices whether moving in controlled air space, in uncontrolled air space or in outer space; otherwise a space device could be subject to either air law or space law, depending on the altitude at which it was moving."⁴⁵ Damages were to be measured by the national law of the injured person so that compensation would reflect only particular national economic and social factors.

It was his view that Article 2 of this proposal, dealing with the liability of states, would not preclude private persons from launching and orbiting space devices. However, it was expected that such activity would be subject to prior authorization by the state from which the launch might take place. On this basis the launching state would be expected to be liable for both private and public harms

⁴² *Ibid.*

⁴³ *Ibid.* Pursuant to the proposal each state would be obliged to conform to the decision of the Court within three months after it had given its judgment. Further, there could be no tolling of the statute of limitations. There could be a joinder of actions under certain circumstances. Presumably the claimant state would be able to make claims on behalf of its residents as well as for itself.

⁴⁴ U.N. Doc. A/AC.105/C.2/SR.25, 6.

⁴⁵ *Ibid.*, 7.

to others. There could be one exception to the right on the part of the injured person (represented by a state) to bring a claim against only one state and this would be where "several devices for which different States were responsible simultaneously caused damage to third persons."⁴⁶

In commenting on the nature and extent of national liability, the Belgian representative noted that harm might result not only from the descent of a space device but also that it might be the product of the launching or motion of the device. The following example was given: "An aircraft might be damaged because its crew had tried to avoid a collision with a space device or because it had been struck by a space device or part of a device, even though the latter itself disintegrated and caused no direct damage."⁴⁷ It was also his view that the nature and extent of liability ought to be based on the national law of the person injured rather than on an internationally accepted definition "which could only be an arbitrary and unsatisfactory common denominator."⁴⁸

During the April–May 1963 meeting of the legal subcommittee of the Committee on the Peaceful Uses of Outer Space, many delegations compared or commented on the matter of liability as contained in the United States and the Soviet statements of principles and on the United States and Belgian proposals relating to detailed rules. The Indian representative noted the existence of "a parallel" between Article 6 of the United States principles and Article 11 of the Soviet principles.⁴⁹ He held the view that Article 7 of the Soviet statement of principles, which urged that launching of space vehicles be limited to states only, was met by the terms of Article 6 of the United States statement of principles, since the latter sought to avoid the possibility of irresponsibility on the part of private launchers. In order to further clarify the issue, however, it was his view that provision might be made that space vehicles should not be "operated by individuals or corporations except with a license granted by the State of which they were nationals and that the State should give full clearance before each launching."⁵⁰

⁴⁶ *Ibid.*

⁴⁷ *Ibid.*, 7.

⁴⁸ *Ibid.* The British representative had previously called attention to the need to arrive at a decision how "liability should be assigned in cases where more than one State or organization was involved and whether liability should be limited in amount." *U.N. Doc. A/AC.105/C.2/SR.17*, 9.

⁴⁹ *U.N. Doc. A/AC.105/C.2/SR.28*, 5.

⁵⁰ *U.N. Doc. A/AC.105/C.2/SR.22*, 9. The Soviet view that only states might engage in space launches had been subjected to much criticism on the ground that it sought to impose a single and preferred social and economic system for space exploration.

General agreement was expressed that privately launched space vehicles should be required to obtain national licenses prior to launch. The Canadian representative observed that in order to "guard against irresponsible activities, the operation of space craft by private individuals, corporations or organizations should be explicitly forbidden save under license from the State of nationality. That would satisfy the Soviet Union's rightful concern that States should bear final responsibility for the space activity of national and international organizations, and a valuable principle, applicable to both structures of society, could be drafted."⁵¹

A comparison was made by the Czechoslovakian delegate between the United States and Belgian proposals. In noting that the United States proposal did not cover events taking place in outer space, he failed to acknowledge the view of the United States that this subject should be dealt with separately.⁵² Regarding the Belgian proposal, he seemingly failed to realize that it did make provision for collisions in outer space when he told the subcommitte that this proposal did not cover damage caused by one space vehicle to another in outer space.⁵³

On the subject of liability he complained that neither draft considered "damage cause by explosions or other experiments conducted at very high altitudes."⁵⁴ These problems, of course, had been made the subject of numerous discussions at the United Nations wherein the United States had made known its policy to consult with COSPAR prior to injecting possibly dangerous or experimental materials into outer space.⁵⁵ While acknowledging that both drafts took into account the principle of absolute liability, he stated that this was not in accordance with the "current practice of States as

⁵¹ U.N. Doc. A/AC.105/C.2/SR.21, 6. This view was supported by Japan, which also held that licenses should be issued only to nationals. U.N. Doc. A/AC.105/C.2/SR.22, 11. The United Kingdom suggested that licensing might be accompanied by state supervision of private launches, since, "the underlying principle was that the nature of space operations required a continuing state of responsibility for them, whatever arrangements might be made between a State and private operators. The United States Communications Satellite Act (1962), expressed in very concrete form the concepts of governmental permission and governmental supervision." U.N. Doc. A/AC.105/C.2/SR.24, 12.

⁵² *Supra*, p. 359.

⁵³ U.N. Doc. A/AC.105/C.2/SR.25, 9. Compare Resolution 1962 (XVIII).

⁵⁴ *Ibid.* For the 1963 Moscow Treaty, Annex 19, *infra*, p. 470.

⁵⁵ *Supra*, pp. 219-245, 303-318. Compare Article 6 of the Soviet draft declaration, Annex 16, *infra*, p. 466.

illustrated by Articles 20 and 21 of the Warsaw Convention⁵⁶ [for the Unification of Certain Rules Relating to International Transportation by Air, 1929, governing liability of air carriers to passengers and to cargo consignees], nor with the provisions of the Brussels Convention on liability of nuclear ships [European Convention on Nuclear Damage]⁵⁷. It should be noted, however, that the Rome Conventions for the Unification of Certain Rules Relating to Damage Caused by Aircraft to Third Parties on the Surface, of 1933 and 1952, have adopted the rule of liability without fault. In commenting on this aspect of liability, Beresford has written that since "contributory negligence is a defense under article 6, it is more accurate to say that the causing of ground damage creates a conclusive presumption of negligence."⁵⁸ Hingorani, on the other hand, considers the European Convention on Nuclear Damage to be inadequate as an analogy for liability for space activity. He has said that one may not receive "any guidance from the European Convention on Nuclear Damage, where liability is limited, because it is not a universal convention and is fixed arbitrarily."⁵⁹

⁵⁶ *The Warsaw Convention*, 49 Stat. 3000, T.S. 876. The United States ratified the Convention on July 31, 1934, with one reservation. Articles 20 and 21 excuse the carrier from liability if it can prove that all necessary measures were taken to avoid damage or in the alternative that it was impossible for it to take such measures. Liability on the part of the carrier was excused respecting the transportation of goods and baggage if there were a showing that there was a pilot, handling, or navigational error and in all other respects the carrier had taken all necessary measures to avoid damage. Contributory negligence could also be a complete or partial defense. Under the Hague Protocol of 1955, the carrier's immunity from liability was restricted by eliminating the defenses of error in piloting, handling of the aircraft, or navigating. In the Protocol the following language no longer appeared: "in all other respects he and his agents have taken all necessary measures to avoid the damage." An analysis of the Warsaw Convention, The Hague Protocol, and international limitation of liability relating to aircraft is contained in the addresses of Lissitzyn, Calkins, and Metzger at the 1962 annual meeting of the American Society of International Law. *Proceedings of the American Society of International Law* 115-132 (1962).

⁵⁷ U.N. Doc. A/AC.105/C.2/SR.25, 9.

⁵⁸ Beresford, "Principles of Spacecraft Liability," *Third Colloquium* 156, footnote 5. This amounts to "absolute liability on the proof of damage * * *" Simeone, *supra* note 8, at 53. Compare, Meyer, *supra* note 20, at 344.

⁵⁹ Hingorani, *supra* note 13, at 217. He has added that limitation of liability requires that there be an adequate means of assessing it, and that perhaps "future events may evolve a method of fixing liability based on weight or manufacturing cost of the satellite or even some arbitrary figure as fixed among nations." *Ibid.*, 217.

The Czech representative, without noting the differences between the Warsaw Convention of 1929, as modified at The Hague in 1955, and the Rome Conventions of 1933 and 1952, did recognize that liability provisions relating to air transport (as well as maritime transport) were not necessarily applicable to damages resulting from spacecraft accidents. In his view, states might be relieved of liability either partially or fully if damage resulted from the collision of a space vehicle with a meteorite, but suggested that responsibility and liability would apply to a state for causing harm by means of an explosion in space or by means of launching an uncontrollable object. Such conduct involved "harmful acts"⁶⁰ and liability should be that of states and not other launching entities. In this way, claims for harms should be accomplished by means of direct negotiations between the state within which the damage was caused and "the State causing the damage."⁶¹ He was critical of the terms contained in the United States and Belgian drafts making provision for ultimate recourse to the World Court in view of the fact that the "Court's jurisdiction would not necessarily be recognized by all States."⁶²

The delegates from a number of states expressed views on the proposals contained in the several drafts. At the beginning of the discussions, the Austrian representative stated that the United States had put forward "a useful proposal."⁶³ In summarizing the work of the legal subcommittee, he stated that there had been unanimity that the draft declaration of basic principles should make provision that "States were liable for damage caused by space vehicles."⁶⁴ The Italian representative noted that states with limited space resources should be induced to participate in the space programs of international organizations and these organizations would be responsible for harms caused. The liability of each participant state would then be apportioned on the basis of the "actual participation of a given country in a project."⁶⁵ The Canadian representative expressed the view that a state, states acting cooperatively, and international organizations engaging in space activities must assume responsibility for their conduct, and that "explicit reference might be made to the principle of the liability of States for internationally injurious acts

⁶⁰ U.N. Doc. A/AC.105/C.2/SR.25, 9.

⁶¹ *Ibid.*

⁶² *Ibid.*, 10.

⁶³ U.N. Doc. A/AC.105/C.2/SR.16, 6.

⁶⁴ U.N. Doc. A/AC.105/C.2/SR.28, 3.

⁶⁵ U.N. Doc. A/AC.105/C.2/SR.20, 6.

of their nations or national organizations.”⁶⁶ Albania subscribed to the view that a state should be considered liable for damage caused by it.⁶⁷ Argentina supported the view that states or international organizations “authorizing or carrying out the launching [of space craft] was internationally liable.”⁶⁸

After taking note of the differing views as to liability to be found in divergent national legal systems, the Hungarian representative stressed the view that basic space principles should be accepted internationally prior to the elaboration of rules on liability. He limited his observations to a single cause of liability, namely, a collision affecting a space vehicle or its crew. He urged that in principle, liability should be imposed on the launching party, and that each of the “parties concerned should assume liability for the damage it had sustained, with the following exceptions: (1) if one of the parties had undertaken the launching with a view to pursuing an unlawful activity, or if the space vehicle or object in question had exercised an unlawful effect, that party should assume full liability; (2) if one of the parties produced evidence that damage had been caused through the wilful act or gross negligence of the other party, the latter should also assume liability for the damage caused to the former.”⁶⁹ Following the views expressed by other members of the Communist bloc, it was suggested that disputes be resolved by pacific means pursuant to Article 33 of the U.N. Charter, with a preference for arbitration by mutual consent. Reference to the International Court of Justice was not regarded as a satisfactory procedure.⁷⁰ The Czech representative charged that some states sought to engage in “espionage” and unpermitted experiments in outer space and that it was their intent to refuse to accept liability for damages caused by such activities.⁷¹ He also stated that existing legal norms probably covered damages caused by spacecraft on land, in the air, and on the

⁶⁶ U.N. Doc. A/AC.105/C.2/SR.21, 6. The Soviet delegate in urging initially that space activities be conducted by states, noted that the states which held that private bodies be permitted to use outer space had taken the view that “the State concerned should have ultimate responsibility.” U.N. Doc. A/AC.105/C.2/SR.22, 5.

⁶⁷ U.N. Doc. A/AC.105/C.2/SR.24, 3.

⁶⁸ U.N. Doc. A/AC.105/C.2/SR.24, 10. Argentina also expressed the view that “the answers to such questions as the class of interests protected, the type of activity giving rise to liability and other connected problems would vary with the particular legal system applied in analysing them.” *Ibid.*

⁶⁹ U.N. Doc. A/AC.105/C.2/SR.26, 5.

⁷⁰ *Ibid.*, 6.

⁷¹ U.N. Doc. A/AC.105/C.2/SR.28, 7.

sea but that the "question of liability for damage caused in outer space had not been regulated * * *"⁷²

During the April-May 1963 discussions in the legal subcommittee, progress was made in complying with the mandate of the General Assembly contained in Resolution 1802 (XVII). Part A of the Resolution requested that urgent attention be given to the further "elaboration of basic legal principles governing * * * liability for space vehicle accidents * * *."⁷³ It was not, however, possible to arrive at a consensus on all points raised.

Progress was made in establishing a consensus that harms caused by space vehicles should be compensated, particularly if the effects were experienced on the surface of the earth, including the oceans, and in the airspace. There was not the same consensus respecting harms taking place in outer space.

Liability was held to pertain principally to states, although when space activities were conducted by groups of states or by international organizations the liability became that of the responsible body. A state was thought to be responsible for damages caused by private entities having been authorized or permitted to launch a space vehicle from its territory. It was generally agreed that private space activities should be conducted only after having been licensed or registered by a state, and that the licensing state should undertake inspection and identification procedures prior to launch to insure the maintenance of adequate safety standards.

It was suggested that the state of launch need not be the only responsible party, in that liability might also result from operation and use of a space vehicle, and that many combinations as to launch, operation, and use might be expected. Where groups of states and international organizations engaged in launch, operation, or use, it was suggested that liability might be apportioned pursuant to express agreement and that international organizations might provide, in their own constitutional structure, for a formula for sharing payments of damages, but that states either as principals or as underwriters might ultimately be held accountable for the payment of damages.

There was general agreement that liability for harms resulting on the ground, on the sea, and in airspace should be strict or absolute, assuming the nonexistence of any intent to cause harm. However, in the event of collision between spacecraft—and probably between spacecraft and aircraft—some doubt was expressed as to the appli-

⁷² *Ibid.*

⁷³ Resolution 1802 (XVII). Annex 3, *infra*, p. 446.

cability of the rule of absolute liability. While there was apparent agreement that an international standard ought to be established, the view was also expressed that states under their own domestic law should establish the monetary limitations on such liability. The need for an express international agreement establishing both the principle of absolute liability and the monetary limits of national liability was generally conceded.⁷⁴ No figure as to the limits of such liability was mentioned.

There was no agreement as to the legal or political procedures whereby claims for damages might be litigated or negotiated. The states of the Free World generally favored the use of existing legal institutions such as the International Court of Justice or international commissions. The members of the Communist bloc expressed their long standing opposition to regularized legal institutions, particularly the World Court, and suggested that settlements be negotiated. The members of the Communist bloc also asserted the need to establish a broad statement of principles, whereas the Free World states regarded the subject of liability for damages as being a very practical one capable of supporting detailed rules, and, in fact, requiring the early establishment of express provisions.⁷⁵

3. Communist Bloc Views

The views put forward in the legal subcommittee of the U.N. Committee on the Peaceful Uses of Outer Space have found general support in current legal literature. However, it should be noted that the academic literature coming from the Communist bloc countries is not always in agreement with the views expressed in the Free World. Soviet interest in the matter of liability has been incidental until quite recently, and early Soviet views were concerned almost entirely with such issues as sovereignty and security.⁷⁶

⁷⁴ In the absence of such an agreement, claims against the United States for an extraterritorial or foreign catastrophe would be subject to existing law. See *Financial Protection*, *supra* note 5, at 42-47. Under existing international law, an international tribunal could "hold the United States liable to a state whose nationals were injured by its activity, whether this liability were predicated on a theory of absolute liability or one which entailed a greater balancing of interests." *Ibid.*, 85-86.

⁷⁵ Discussions under the auspices of the U.N. Committee on the Peaceful Uses of Outer Space were conducted in Geneva during March 1964.

⁷⁶ *Survey of Space Law*, *supra* note 20, at 32-33. Compare, Lipson, *Outer Space and International Law* 12-21 (1958). Crane has noted instances of Soviet concern in Soviet publications dating from 1956 for alleged damages caused on the ground by space vehicles. He has also noted Soviet contentions that damages have been caused by the nuclear contamination of space, copper

Korovin, writing in 1959, took passing note of the problem of liability. After observing that launches up to that time had been "solely under the auspices of governmental bodies * * *" he asserted that "full responsibility for eventual damage lies with the Government concerned in the event of personal or property losses for citizens of foreign countries."⁷⁷ In this connection he held that "all universally accepted rules of international law (inadmissibility of the use of force in solving international disputes, noninjury of foreign citizens, and their property, governmental responsibility for the activities of their representatives, etc.) apply to the Cosmos as well."⁷⁸

The Polish author, Zylicz, also assumed that civil liability would be related to launches by states, or by international organizations, and that "the states or the competent international organizations should in this case be held responsible * * *" i.e., liable for damages.⁷⁹ Another Polish author, Machowski, has examined several of the important questions of liability for injury or damage from unmanned space vehicles. He has noted the possibility of collisions between space vehicles in outer space, of interference between spacecraft or disintegrating parts with aircraft in airspace, and of damage to persons or property on land or on the sea. It was his view that the injured party had a right against the launching state.⁸⁰ His assumption is also that launched space vehicles would be state owned and considered that under international law the right to launch must be subject to the duty to pay compensation for resulting injuries. His analysis goes no further than enunciating the right and duty relationship.

Several American analysts have provided some insight to this Soviet view of liability. Whelan has stated that the Soviet writers

needles, spent satellites, interference with communications, arbitrary weather control, and harms caused by "violation of the principles of peaceful co-existence governing the demilitarization of outer space." Crane, "Soviet Attitude Toward International Space Law," 56 *A.J.I.L.* 707 (1962). Compare Kucherov, "The USSR and Sovereignty in Outer Space," *Bulletin, Institute for the Study of the USSR* 25-33 (February 1965).

⁷⁷ Korovin, "International Status of Cosmic Space," *International Affairs (Moscow)* 56 (January 1959); *Legal Problems of Space Exploration, A Symposium* 1067.

⁷⁸ *Ibid.*, 1070.

⁷⁹ Zylicz, "Some Problems of Astronautical Law," *Revue Générale de Droit International Public* 663-664 (October-December 1958); *Legal Problems of Space Exploration, A Symposium* 1162.

⁸⁰ Machowski, "The Legal Status of Unmanned Space Vehicles," *Second Colloquium* 117; *Legal Problems of Space Exploration, A Symposium* 1211.

have accepted the principle that a state is liable for personal and material damages caused by space vehicles because the same principle prevails in Soviet domestic legislation for damages caused by Soviet vehicles in their national airspace.⁸¹ At the time his conclusion was reached, Article 78 of the Soviet Air Code⁸² and Article 404 of the Soviet Civil Code governed such liability, yet claimants were denied damages presumably because of their intentional conduct or gross negligence. Whelan therefore speculated that it was conceivable the Soviets would "accept full responsibility of the state for damages caused by its outer space vehicles,"⁸³ but also suggested that the reciprocal application of this view might be limited by the nature of the conduct of a claimant. Basing his interpretation on a 1961 article by Korovin,⁸⁴ Whelan considered that Soviet acceptance of liability might be contingent upon whether the spacecraft of the claimant state had been previously engaged in civilian and peaceful

⁸¹ Whelan, "Soviet Attitude Toward International Law and Outer Space," in *Soviet Space Programs: Organization, Plans, Goals, and International Implications*, 87th Cong., 2nd Sess., 209 (1962).

⁸² Section 78 of the August 7, 1935 code provided: "Any institution, enterprise, organization, or person exploiting a civil aircraft shall be liable, under the laws of the Soviet Union * * * to repair damages caused by death or bodily injuries to passengers during the takeoff, flight, and landing, as well as damages caused by injuries to property or persons not carried by aircraft, unless it is proved that the injury occurred as a consequence of the intent or gross negligence of the injured person himself." *Air Laws and Treaties of the World*, Committee on Science and Astronautics, 87th Cong., 1st Sess., 1318 (1961). Significant changes were made in 1962 Soviet domestic legislation. According to Crane "Article 90 of the 1962 U.S.S.R. Civil Code provides for liability for injury resulting from extra-hazardous activities unless caused by *force majeure* (similar to the common-law concept of 'act of God') or by the intent of the injured party. Article 101 of the 1962 U.S.S.R. Air Code, on the other hand, provides for liability regardless of *force majeure*, although in cases of *force majeure* there is no liability where there is intent or gross negligence on the part of the injured." "The principal pertinent changes in the 1962 codes are the elimination of gross negligence as a defense in Art. 90 of the U.S.S.R. Civil Code and the addition of gross negligence as a defense for cases of *force majeure* only in Art. 101 of the U.S.S.R. Air Code." Crane, *supra* note 76, at 709 and footnote 84.

⁸³ Whelan, *op. cit.*, 210. Crane has concluded that after the amendments "an analogy with Soviet domestic law would support absolute liability for damage caused by Soviet space vehicles." Crane, *supra* note 76, at 709. Compare Pepin, "Damage to Third Parties on the Surface Caused by Space Vehicles," *Third Colloquium* 132.

⁸⁴ Korovin, "Space Exploration and International Relations, A Discussion," *International Affairs (Moscow)* 61-62 (June 1961).

pursuits rather than those of an "aggressive" nature.⁸⁵ This implies that if a claim were filed by a state against the Soviet Union for damages caused by a Soviet space vehicle, the Soviet Union would take into account its interpretation of the nature of the space activities of the claimant state in determining if it would concede liability.⁸⁶

It is clear that the Soviets prefer the process of negotiation to the use of legal institutions in resolving international disputes since the former makes it possible for the country to veto any previously accepted agreement fixing the existence and amount of liability. Crane has pointed out that "The significance of this emphasis on dispute-settlement will depend on the extent to which the problem of damages has been integrated into over-all Communist global strategy, just as has every other problem and area of Soviet space law."⁸⁷

4. Free World Views: Individuals

By contrast, the Free World publicists have been interested in the development of a series of substantive legal rules having applicability to practical space situations. The typical approach has visualized a comprehensive legal order for space activities somewhat paralleling existing air and sea practices as regulated by custom and international conventions. Typical of this approach have been the suggestions of Jenks, who has taken into account a comprehensive list of situations dealt with by conventional law. He has sought to relate such responses to space law. Thus, he has suggested, in so far as the matter of liability is concerned, that benefit might be derived from noting possible analogies to the provisions of the Rome Convention of 1952 on Damage Caused by Foreign Aircraft to Third Parties on the Surface, to the International Code of Signals, to the International Collision Regulations annexed to the International Convention for the Safety of Life at Sea, and to the Navigation Code of the Air consti-

⁸⁵ Whelan, *op. cit.*, 210-211; Crane, *supra* note 76, at 708-709.

⁸⁶ Crane concurs with Whelan's conclusion that the Soviets may additionally require that the problem of return of space vehicles and personnel be related to liability. According to Crane "it is not clear whether the Soviets consider that the right of a nation—specifically the U.S.S.R.—to the return or recovery of its spacecraft should be made conditional upon the acceptance by that nation of liability for injury or damage caused by such spacecraft, or whether, to the contrary, the acceptance of liability should be made contingent upon recognition by the other countries of a duty to return the vehicle." Crane, *supra* note 76, at 708.

⁸⁷ Crane, *supra* note 76, at 710. However, in General Assembly Resolution 1962 (XVIII) of December 24, 1963, the Soviets were able to agree to a statement of principles acceptable to the United States. See Annex 4, *infra*, p. 450.

tuted by the annexes to the International Civil Aviation Convention.⁸⁸

Western writers, who generally emphasize the nature of the activity rather than the place of its occurrence, have sought to clarify such problems as: the basis or bases for liability in the event of space activity damage,⁸⁹ whether liability should be imposed on those who have launched space devices or whether it should extend beyond the factor of launch to operation and use,⁹⁰ whether such form of liability as may be agreed on (based on the standard of strict or absolute liability, or fault, or negligence, etc.) should be primarily that of a state, association of states, or international organization,⁹¹

⁸⁸ Jenks, "International Law and Space Activities in Space," 5 *International and Comparative Law Quarterly* 105 (January, 1956); *Legal Problems of Space Exploration, A Symposium* 38-39.

⁸⁹ Haley, *supra* note 1, at 296. Hingorani, *supra* note 13, at 214. Simeone, *supra* note 8, at 52. Mankiewicz, *supra* note 13, at 209. Verschoor, *supra* note 12, at 103. Vallado, "The Law of Interplanetary Space," *Second Colloquium* 163. Beresford, *supra* note 58, at 153-155. Cooper, *supra* note 13, at 143. The foregoing have been in agreement that the standard of strict liability should apply to damages occurring on the ground, on the sea, and in airspace as a result of space activities. The rationale has been that at the present time space activities constitute extrahazardous dangers. Wright has supported this result with the maxim *sic utere tuo ut non alienum laedas*, and has written that states "must prevent the launching of missiles or satellites which might land in foreign territory or on the high seas, or, alternatively, assume full responsibility to repair damage to other states consequent upon such landing." Wright, "Subversive Intervention," 54 *A.J.I.L.* 528 (1960). This view is supported by holdings in the *Trail Smelter Case*, 1941, U.S. Arbitration Series 36, 35 *A.J.I.L.* 684 (1941), and in the *Corfu Channel Case (Merits)*, 1949, *I. C. J. Reports* 4, 22. Compare Briggs, *The Law of Nations* 310, 2nd ed., (1952), McDougal and Schlei, "The Hydrogen Bomb Test in Perspective, Lawful Measures for Security," 64 *Yale Law Journal* 682 ff. (1955), Regala, "Legal Problems Arising from the Use of Unmanned Earth Satellites," 33 *Philippine Law Journal* 645 (1958), Schachter, "Comments," 1958 *Proceedings of the American Society of International Law* 247.

⁹⁰ Verschoor, "Observations on Comparing the Responsibility for Damage by Space Craft and that Caused by Nuclear Installations and Nuclear Powered Ships," *Fourth Colloquium* 333 (1963). It was noted that the operator in most instances would be a state. The Davies draft takes note that where a collision takes place in outer space, the operating state (as distinguished from the launching or state responsible for launch) might reasonably be required to bear its own loss. *Davies Draft Code of Rules on the Exploration and Uses of Outer Space* 16. Compare the statements made by the representative of the United Kingdom to the legal subcommittee. *Supra*, p. 360-361.

⁹¹ Cooper, *supra* note 13, at 144. Cooper assumes that states will either launch or authorize the launching of space vehicles. Hingorani, *supra* note 13, at 216, also believes that the launching state must assume liability. Rivoire, "Design for a Law of Space," *First Colloquium* 101, has advanced the view that opera-

whether the same standard should be applied to events occurring on the ground, on the sea, in the airspace or in outer space,⁹² the special problem of collision of spacecraft in outer space,⁹³ the nature of acts or events constituting damage,⁹⁴ limits, if any, on the amount of dam-

tions might be conducted by a Space Agency, and that it would be liable for damages under certain conditions. Regala, *supra* note 89, at 645. Machowski, *supra* note 80, at 117, has asked if the doctrine of sovereignty would prevent national liability. Presumably it could be one of the purposes of an international convention to eliminate such a defense. According to Cooper "it seems doubtful whether launching States will agree both to waive sovereign immunity and to consent to be sued in foreign courts." *Ibid.* The UN discussions have been based on the concept of international responsibility. *Supra*, pp. 352ff.

⁹² Cooper has urged the acceptance of the standard of absolute liability on the part of the launching state for damage on the surface and in airspace. However, he would apply the standard of negligence to damage in outer space. *Supra* note 13, at 134. Beresford has noted also that "proof of negligence is apt to be very difficult. Not only may the necessary evidence be complex and technical, but it may be known only to the Government, and protected by rules of military security." *Supra* note 58, at 153. Thus he supports the view that "liability without fault for personal injury and property damage to third parties on the ground" should be accepted. *Ibid.*, 155. However, this does not take into account damages to spacecraft resulting from collisions in outer space. In this connection it may be noted that Gerlach has stated that the chances of collision between spacecraft are "practically nil." "Contribution," *First Colloquium* 67, Compare Beresford, *supra* note 13, at 242. However, the fact remains that such collisions or accidents may occur between space objects while in outer space. Consequently, General Assembly Resolution 1962 (8) provided that "Each State which launches or procures the launching of an object into outer space, and each State from whose territory or facility an object is launched, is internationally liable for damage to a foreign State or to its natural or juridical persons by such object or its component parts on the earth, in air space, or in outer space."

⁹³ Such collisions might be with natural objects, such as celestial bodies or meteors. It could involve contact with other spacecraft. Such contact could be either intentional or accidental. Verschoor has suggested that a launching state might claim nonliability on the grounds of *force majeure* where there had been an "unforeseen collision with a meteor." *Supra* note 12, at 103. Mankiewicz has urged the acceptance of the standard of absolute liability for "those who control the launching of the space vehicle or the activities for which it is used * * *" [and] that the "same principle should apply to whatever damage is caused by a space vehicle or a space activity, irrespective of the kind of the damage and the place where it occurs." *Supra* note 13, at 209-210. Compare Haley, *supra* note 1, at 299-300.

⁹⁴ Most of the commentators have discussed harm as the product of tangible destruction or injury to persons and property, such as toxic harm resulting from inhalation of fumes from fuel, or destruction of property from explosion or collision, or personal injury or death resulting from being struck by parts

ages,⁹⁵ the implementation of international agreements in national laws,⁹⁶ the jurisdiction of national courts over claims for damage,⁹⁷

of a space vehicle or debris. Harm may take varying forms. Keating has noted the possibility of trespass by satellite. "Space Law and the Fourth Dimension of Our Age," *First Colloquium* 87. Presumably this would take into account unsanctioned movement through a nation's airspace, and would raise the question of the reasonable measure of damage. In view of the fact that small satellites might make several or more orbits before being consumed in the atmosphere or landing, the measure of damages, if any, would have to consider the number of trespasses. Spent satellites may have a life expectancy of many years with a resulting interference with the proposed orbits of new satellites. This fact might be considered as a basis for damage, particularly when such satellites continued to transmit radio signals causing interference with frequencies allocated to other users by the International Telecommunications Union. Lyon, *supra* note 20, at 284. Noise may become a basis for liability.

⁹⁵ There is general agreement that the conventions dealing with the liability for aircraft damage are inapplicable to space vehicles. Proposals range from full responsibility to limited liability. Comparisons have been made with liability for nuclear disaster where under the Price-Anderson amendments to the Atomic Energy Act of 1954 the maximum figure of \$500,000,000 has been fixed for indemnification in connection with each domestic nuclear incident. See *Financial Protection Against Risks of Major Harm in Government Programs* 17; Verschoor, *supra* note 12, at 103; Haley, *supra* note 1, at 294. Beresford has noted that the OEEC draft convention on liability arising from nuclear risks fixes a limit of \$15,000,000 and that "as a practical matter, damages must probably be limited since States are not likely to assume unlimited liability. On the other hand, the limit of damages should be set high enough to compensate litigants for the greatest injury or loss that can be reasonably expected." *Supra* note 58, at 154. However, under the OEEC draft, a state may be permitted to limit liability to \$5,000,000. Compare, Verschoor, *supra* note 90, at 332.

⁹⁶ This is essentially a national problem and depends on whether the international convention is or is not self-executing. In order to avoid uncertainties it may be desirable to specify in the convention that it is self-executing, that is, does not require implementing legislation. Or, certain provisions could be described as self-executing. In the United States there has been much attention given to the contents of treaties in order to ascertain if they fall into one of these categories, for example, the U.N. Charter. See Hudson, "Charter Provisions on Human Rights in American Law," 44 *A.J.I.L.* 543 (1950); Evans, "Some Aspects of the Problem of Self-Executing Treaties," 44 *Proceedings of the American Society of International Law* 68 (1951). Wright, "National Courts and Human Rights—the Fujii Case," 45 *A.J.I.L.* 62 (1951). Preuss, "Some Aspects of the Human Rights Provisions of the Charter and their Execution in the United States," 46 *A.J.I.L.* 289 (1952).

⁹⁷ *Financial Protection Against Risks of Major Harm in Government* 7-8, 42-43, 78-84. Leonard, "The United States as a Litigant in Foreign Courts," 52 *Proceedings of the American Society of International Law* 101-102 (1958).

the extent to which a state might pursue claims against the entity causing the harm,⁹⁸ and the process whereby international responsibility might be established.⁹⁹

5. Free World Views: Groups

The problems of liability have attracted the attention of several prominent international groups. In 1961, at the 12th Conference of the Inter-American Bar Association, a Magna Carta of Space was adopted in which that body favored the view that "In the event of injuries or death to persons or damage to property caused by space vehicles, rockets, missiles, satellites and the like, the sovereign power by or through which they have been launched shall be responsible and liable for all such damage without the requirement of any proof of fault, negligence, carelessness or recklessness."¹⁰⁰

The Committee on Aeronautics of the Association of the Bar of the City of New York has suggested some tentative views in a pro-

⁹⁸ See Note 93, *supra*. Cooper has urged recovery to include damage to individuals and damage suffered by a state. *Supra* note 13, at 144.

⁹⁹ Judicial processes, such as the International Court of Justice, have been preferred. Rauchhaupt, "World Space Law," *Second Colloquium* 127, has suggested an appropriate international court either connected with the World Court or a separate one as in the case of the Coal and Steel Community. He has also noted the suitability of arbitration. "The Problem of Damages in Space Law," *Third Colloquium* 136. Weinmann and H. C. McDougall have considered diplomatic negotiations, voluntary arbitration, or the World Court to be appropriate methods. "The Law of Space," 35 *Foreign Service Journal* 22 (April 1958). For an analysis of problems involved in the use of national commissions for settling international claims, see Lillich, *International Claims: Their Adjudication by National Commissions* (1962).

Cooper has said that where claims arise from collision or other damage in outer space states "should have the right to invoke the compulsory jurisdiction of the International Court of Justice." *Supra* note 13, at 144. Beresford has urged that the compulsory jurisdiction of the World Court be used, and that claims heard there should include harms suffered both by states and by private persons. As an alternative he has noted the possibility of arbitration, "either by a permanent commission or by *ad hoc* commissions composed of representatives from the countries concerned." He has noted the difficulties involved in suits in the municipal courts of the nation responsible for the harm. *Supra* note 58, at 155. Compare, *Report to the United Nations General Assembly*, United Nations *Ad Hoc Committee on the Peaceful Uses of Outer Space*, U.N. Doc. A/4141, 23; *Legal Problems of Space Exploration, A Symposium* 1269.

¹⁰⁰ *Resolutions, Recommendations, and Declarations Adopted by The Twelfth Conference of the Inter-American Bar Association* 4 (1961). In 1964 the leaders of this body were critical of General Assembly Resolution 1962 (XVIII) as not going far enough in establishing rules on liability. *Los Angeles Times*, April 6, 1964.

visional draft agreement. Its proposal provided that the participating states would "consider that injury or damage caused by space activities should, subject to any limits to be specified in the future, be reimbursed, regardless of fault, by the State or States responsible for the space activity."¹⁰¹ The Bar group noted the need for express agreement on the "incidence and possible limits of liability, the procedures for obtaining reimbursement, liability in case of collision, and the possible desirability of regular contributions by States or other organizations engaged in space activities to an international fund out of which such reimbursement might be claimed."¹⁰²

The Davies Draft Code of Rules, which took into account the possibility that a private person might be licensed to engage in space activity, placed responsibility for space harms squarely on the public launching entity. Paragraph 6 of the draft provided:

6.1 The State or States or international body responsible for the launching of a spacecraft shall be liable for any breach of the Draft Code in which it may be involved, for any injury or loss caused by the spacecraft, or any part of it

a. by physical impact, contamination, or otherwise, to any person or property whatsoever outside the territory of the States responsible for the flight of the spacecraft;

b. as a result of collision or navigational interference to any aircraft,

1. in the airspace of another State: or

2. of a nationality other than that of the spacecraft, without proof of negligence in the operation of the spacecraft being required.¹⁰³

The proponents of this rule urged that states should bear their own loss for the damage resulting from the collision of spacecraft in outer space, but was qualified that if by agreement a state were required to give prior notice of a launch and failed to do so, a valid basis for assigning liability to the noncomplying state existed. Additionally, since contamination might take several forms, including radiation and microorganisms returned to earth by space vehicles

¹⁰¹ *Forum on Space Law* 12 (March 24, 1960).

¹⁰² *Ibid.* As to indemnification see *Financial Protection Against Risks of Major Harm in Government Programs* 16-19, 50-53. The Inter-American Bar Association plan called for the establishment of an international insurance fund to provide for compensation for harms.

¹⁰³ *Davies Draft Code of Rules on the Exploration and Uses of Outer Space* 16. The proposal suggested a ceiling of fifty million dollars for liability for injury or loss.

which had been in contact with celestial bodies, the need for an international body to enforce claims was also foreseen.¹⁰⁴

Meyer has reported the findings of the Legal Committee of the German Scientific Society for Air Navigation which, in 1962, considered the question of liability for damages caused by spacecraft.¹⁰⁵ It was their view that tort liability should be imposed on the operator of a spacecraft, and that where such craft was engaged in flight to the surface of the earth or *in* airspace, the rule of absolute liability was to be imposed on any collisions between aircraft and spacecraft. In the event of a collision in outer space, liability was to depend on proof of fault, but by reason of the difficulty of such proof, this approach would result in each operator's bearing its own loss. The group considered that "contributory negligence of the person who suffers damages or of his servants or agents reduces the compensation or excludes it entirely."¹⁰⁶ The group also considered such issues as: that liability should be limited, that every operator must provide evidence of insurance up to a given (but unstated) amount, that in the event of a private entity's tort, such person might be sued in the national courts where the injury took place, that if such an injury resulted in a stateless territory (such as the high seas), the private litigant might sue in the courts of the state of which he were a national, and that appeals might be taken to the World Court. The latter Court was considered to be the forum for interstate disputes, and was to have exclusive jurisdiction where the amount of the claim exceeded the limits of a state's insurance or the guarantee fund set up to compensate those harmed.

The German Legal Committee took note of the need for an international convention which would establish the conditions under which outer space activities would be subject to license by a state. According to it, state liability should extend to harms occurring in the territory of a state, on and over the high seas, and in outer space. A claim might be maintained by a person whose state had not become a party to the convention. Opposition was expressed to the view that an injured person should be entitled to pursue his claim against his own state when the harm was caused by another state's operator pursuant to some pre-established right of the former to have recourse against the latter. It was thought to be more practical to "channel the liability to the operator of the spacecraft to a certain maximum, and

¹⁰⁴ *Ibid.*, 16-17.

¹⁰⁵ Meyer, *supra* note 20, at 344-345.

¹⁰⁶ *Ibid.*, 344.

then to require the Contracting State which licensed the spacecraft to assume liability for the damages in excess of the limits.”¹⁰⁷

From all of the foregoing, there is strong reason for believing that international lawyers accept the view that a state may be held to account for torts committed outside the territorial jurisdiction of that state.¹⁰⁸ There is clearly an urgent need for an international convention to fix the details. It is particularly necessary to establish the liability of such international corporate bodies as groups of states and international organizations. As Jenks has noted “there remains the question whether its liability should be regarded as arising under and being measured by the law of the territory where the damage or injury is suffered or should be determined by an international standard.”¹⁰⁹ Until an appropriate international convention, buttressed by national legislation, makes specific provision for the myriad of tort problems arising from activities in space, the general consensus as to the substance of rights and duties may fail to afford real protection.¹¹⁰ It would be well to fix reasonable conventional rules prior to an event requiring the ascertainment of individual rights and the nature of international duties. Until this happens states will rely heavily on the principles of General Assembly Resolution 1962 (XVIII).

B. POSSESSORY RIGHTS, ASSISTANCE TO PERSONNEL AND RETURN OF PERSONNEL AND SPACE VEHICLES

1. Possessory Rights

At an earlier stage in the development of the myriad uses of space vehicles, and at a time during which control of the vehicle after launch was less sophisticated than at present, there was some inclination to draw an analogy between spacecraft after launch and a fired

¹⁰⁷ *Ibid.*, 346. Compare Verschoor, *supra* note 90, at 331-333, where notice is taken of the need for a statute of limitations on the filing of claims.

¹⁰⁸ Compare, *Trail Smelter Arbitration*, 35 A.J.I.L. 684 (1941). See also the *Corfu Channel Case*, 1949 I.C.J. Reports 4, 22.

¹⁰⁹ Jenks, *The Proper Law of International Organizations* 224, 219-220 (1962).

¹¹⁰ Bilateral conventions may be used where there is a high degree of probability that one state's activities may be injurious to another state. For example, the United States and Australia entered into an agreement on “Sampling of Radioactivity of Upper Atmosphere by Means of Balloons” relating to operations conducted in Australia. The two countries agreed that to the extent Australia was not otherwise compensated by the United States, the Atomic Energy Commission of the United States would indemnify Australia against “(a) claims in the form of judgments rendered or settlements ap-

bullet, over which it was suggested the firer no longer exercised property or possessory rights.¹¹¹ Others were quick to compare the space vehicle with a baseball or a golf ball with the view that they, like the bullet, were aimed, but unlike the bullet were intended to come again into the possession of the player for future and additional use.¹¹² The assumed inability or limited ability of the launcher to control the space vehicle after launch suggested the possibility that the vehicle, at least by implication, was to be considered as having been abandoned. It was soon realized that such vehicles, and to a lesser extent the launching mechanism which followed the vehicle into space or orbit, were subject to some management from the ground. With the development of many improvements in command systems, particularly with the perfection of the manned satellite and techniques employed in deep space probes, the measure of their control and proprietary attitudes have been substantially increased.¹¹³

Many factors have influenced the conclusion that the launcher, operator, or user of a space vehicle (and presumably its accompanying launching device) retained ownership and possession of the vehicle or device. For example, no express abandonment has ever been recorded and there have been no implied abandonments. Rather, there has been much national pride in the fact that "our" satellite was launched successfully on a given date. Haley has expressed the view that for space vehicles legal abandonment can not take place where "the intent to abandon is lacking."¹¹⁴

Many factual considerations support the view that a launch does not constitute an intentional abandonment of property and possessory rights. The extraordinary value of the launched item, the identify-

proved in advance by [the AEC] * * * for public liability arising out of or in connection with the program, and (b) the reasonable costs of investigating and settling such claims, and defending suits for damage for such public liability provided, however, that this indemnification is subject to the availability of appropriated funds to the [AEC] * * * " TIAS 4739.

¹¹¹ Becker, *Hearings Before House Select Committee on Astronautics and Space Exploration*, 85th Cong., 2d Sess. 1275 (1958).

¹¹² Knauth, "Legal Problems of Outer Space in Relation to the United Nations," *Legal Problems of Space Exploration, A Symposium* 254-255.

¹¹³ However, Pierce has stated that "Space payloads and command systems have been sadly fallible in practice." "Hazards of Communication Satellites," 17 *Bulletin of the Atomic Scientists* 183 (1961); Haley has stated that "No object should be placed in any orbit in outer space which cannot be guided back to earth or destroyed by some other means, such as being guided into the surface of the sun." "Survey of Legal Opinion on Extraterrestrial Jurisdiction," *Third Colloquium* 47. Compare, Bush, letter to *The New York Times*, November 22, 1963.

¹¹⁴ Haley, *supra* note 1, at 309.

ing symbols affixed to the vehicle and device, the placing of human beings on board,¹¹⁵ the significant efforts to recover both manned and unmanned vehicles either from the oceans or by seizing the vehicles while still in the air, all lead to this result. Commemorators have been quick to compare a manned spacecraft with manned aircraft and have noted continuing ownership over aircraft during flight and after landing at a foreign airfield.

The U.S. Congress has made provision for conforming to certain procedures if government property is to be abandoned. In Haley's view "while missiles and similar devices may be 'abandoned' in the physical sense, there can be no abandonment which transfers title to another person unless the statutory methods of abandonment are complied with."¹¹⁶ Thus, from the point of view of the municipal law of the United States, abandonment of these publicly owned vehicles and devices cannot take place, and it would not be possible to support a contention that a lawful finder could exist. At the international level, however, the most plausible argument for return of these vehicles would be based on the analogy of aircraft, particularly where it had been agreed that the spacecraft had been employed for peaceful, i.e., nonaggressive and beneficial, uses.

It might also be argued that there is a relationship between the doctrine of absolute liability for space torts and ownership of the vehicle or launching device. To permit a state to deny ownership of a vehicle or device launched, used, or operated by it might result in a claim by such state that it was under no duty to use care in the course of such launch, use, or operation. This could lead to a chaotic, rather than a structured, regime for outer space involving a refusal to report launchings, disregard for radio regulations, and other procedures necessary for the maximum exploitation and use of outer space for peaceful purposes. For these, and other reasons,¹¹⁷ a working consensus exists which assures to those engaged in the launch, use, or operation of space vehicles and devices full property and possessory rights in such equipment so long as it is used for peaceful purposes.¹¹⁸

¹¹⁵ It has been suggested that the duty of the state to the astronaut includes both the providing of a safe place for space transit and the retention of the data situated within the spacecraft, and hence the craft itself. Cocca, "Legal Status of the Astronaut," *Fourth Colloquium* 146.

¹¹⁶ Haley, *supra* note 1, at 309.

¹¹⁷ Lyon, *supra* note 20, at 282. Lyon has suggested that the vehicle might be regarded as a "detached part of its national territory, subject to national law, whether it be governable or not, manned or unmanned."

¹¹⁸ Compare the Soviet writer, Galina, "On the Question of Interplanetary Law," *Legal Problems of Space Exploration, A Symposium* 1057.

The nature of the consensus may be determined by examining United States and Soviet proposals at the United Nations. On December 8, 1962, the United States suggested, along with other principles contained in its draft declaration, that "Ownership and property rights in a space vehicle and its components remain unaffected in outer space or upon return to the earth."¹¹⁹

On April 16, 1963, the Soviet Union submitted a revised draft declaration of basic principles to the legal subcommittee. In paragraph 8 it was suggested that "States shall retain their sovereign rights over objects they launch into outer space. Rights of ownership in respect of objects launched into outer space and their components remain unaffected while they are in outer space and upon their return to earth."¹²⁰

The major difference, other than the Soviet reference to "sovereignty," has to do with the description of items placed in space. The United States expression "space vehicle and its components," is a more restricted term than "objects" and "their components." It becomes a matter of definition, and in an express international agreement on this subject it might be desirable to employ the term "space device" as contained in the Belgian Working Paper on the Unification of Certain Rules Governing Liability for Damage Caused by

¹¹⁹ *N.N. Doc. A/C.1/881, 3. Annex 10, infra*, pp. 459-460. In September 1963, the United States representative at the United Nations told the Committee on the Peaceful Uses of Outer Space that there should be "the retention by the launching authority of jurisdiction over the ownership of space vehicles." *U.N. Doc. A/AC.105/PV.20*, 18.

¹²⁰ *U.N. Doc. A/AC.105/C.2/L.6a. Annex 16, infra*, pp. 466-468. In September 1963, the Soviet delegate told the Committee on Peaceful Uses of Outer Space that its April 16, 1963 revised draft declaration of basic principles had "adopted the United States wording with regard to the inalienable right of ownership of States to objects launched by them in space." *U.N. Doc. A/AC.105/PV.20*, 37. He also said that it was "universally accepted that the sovereign rights of States with regard to objects launched by them into space is preserved." *Ibid.*, 41. The earlier Soviet Declaration of the Basic Principles Governing the Activities of States Pertaining to the Exploration and Use of Outer Space is *U.N. Doc. A/AC.105/L.2*; *U.N. Doc. A/5181*, Annex III, *infra*, pp. 480-482, Annex 21. With the adoption of General Assembly Resolution 1962 (7) (XVIII) on December 24, 1963, a well defined principle was established. This portion of the Resolution provided "The State on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and any personnel thereon, while in outer space. Ownership of objects launched into outer space, and of their component parts, is not affected by their passage through outer space or by their return to the earth. Such objects or component parts found beyond the limits of the State of registry shall be returned to that State, which shall furnish identifying data upon request prior to return."

Space Vehicles where it was defined as "any device which is intended to move in space, remaining there by means other than the reaction of the air."¹²¹

There is, of course, the additional problem of whether ownership—if recognized internationally—will result automatically in the return of a space vehicle used for peaceful purposes. Efforts have been made, notably by the Soviet Union, to connect the right to return a space vehicle to the requesting state with provision for payment of damages caused by the requesting state or its persons to the state to which the request for return is directed. This view was not incorporated into Resolution 1962 (XVIII).

2. Assistance to Personnel and Return of Personnel and Space Vehicles

The 1959 United Nations *Ad Hoc* Committee on the Peaceful Uses of Outer Space pointed to the need for express international agreements, on a bilateral and multilateral basis, to regulate assistance to space personnel and return of such personnel and space vehicles to the responsible entity. It was noted that a structured regime was required for both manned and unmanned vehicles and for accidental as well as planned landings. The committee stated "among the subjects that might be covered by such agreements would be the return to the launching State of the vehicle itself—and in the case of a manned vehicle—provision for the speedy return of personnel."¹²² It was the view of the committee that certain "substantive rules of international law already exist concerning rights and duties with respect to aircraft and airmen landing on foreign territory through accident, mistake or distress. The opinion was expressed that such rules might be applied in the event of similar landings of space vehicles."¹²³

The United States, on December 8, 1962, submitted to the First Committee on the U.N. General Assembly a Draft Declaration of Principles Relating to the Exploration and Use of Outer Space. It contained a principle dealing with assistance and return of space personnel and a separate principle dealing with the return of space vehicles and their component parts. Each principle was based on

¹²¹ U.N. Doc. A/AC.105/12, 11.

¹²² U.N. Doc. A/4141, 24. Annex 20, *infra*, pp. 472–480.

¹²³ *Ibid.*, 25. This referred to Annexes 12 and 13 on Search and Rescue and Accident Investigation to the International Civil Aviation Convention. Also pertinent is the Convention Promoting Safety of Life at Sea, 1936, T.S. 910, 50 Stat. 1121, and the International Convention for the Safety of Life at Sea, 1948, 3 UST 3450, TIAS No. 2495.

a need resulting from possible accident, distress, or mistake. The December 1962 Draft Declaration of Principles provided in part:

4. States shall render all possible assistance to the personnel of space vehicles who may be the subject of accident or experience conditions of distress, or who may land by reason of accident, distress, or mistake. Space vehicle personnel who make such a landing shall be safely and promptly returned to the launching authority.

5. States shall return to the launching authority any space vehicle or part that has landed by reason of accident, distress, or mistake. Upon request, the launching authority shall furnish identifying data prior to return.¹²⁴

The comparable Soviet proposal of April 16, 1963, provides:

10. States shall regard cosmonauts as envoys of mankind in outer space and shall render all possible assistance to spaceships and their crews which may make an emergency landing on the territory of a foreign State or on the high seas; spaceships, satellites or capsules found beyond the limits of the launching State shall be returned to that State.¹²⁵

There are notable differences in the two proposals. However, before making a comparison, it should be noted that the United States on September 11, 1962, presented to the U.N. Committee on the Peaceful Uses of Outer Space a Draft Proposal on Assistance to and Return of Space Vehicles and Personnel which employed language not found in the later Draft Declaration of Principles.¹²⁶ Paragraph 1 of the earlier Draft Proposal can be compared with the first sentence of paragraph 4 of the Declaration of Principles, but includes after the word "mistake," the expression "or otherwise than as planned."¹²⁷ The Draft Proposal provided that "All possible assistance shall be rendered * * *" rather than "States shall render all possible assistance * * *" The second sentence in paragraph 4 of the Draft Declaration of Principles modified paragraph 2 of the Draft Proposal, which had provided that "Space vehicles—and their personnel in the case of manned vehicles—that land by reason of accident, distress or mistake, or otherwise than as planned, shall be safely and promptly returned to the State or States or international organization responsible for launching."¹²⁸

¹²⁴ U.N. Doc. A/C.1/881, 2. Annex 10, *infra*, pp. 459-460.

¹²⁵ U.N. Doc A/AC.105/C.2/L.6, 2. Annex 16, *infra*, pp. 466-468.

¹²⁶ U.N. Doc. A/AC.105/L.4; U.N. Doc. A/AC.105/12, 5. Annex 8, *infra*, p.

¹²⁷ *Ibid.*

¹²⁸ *Ibid.*

The Draft Proposal did not contain the sentence found in the Draft Declaration of Principles providing "Upon request, the launching authority shall furnish identifying data prior to return." The final paragraph of the Draft Proposal, number 3, provided "Any expense incurred in providing assistance to or return of space vehicles and their personnel shall be borne by the State or States or international organization responsible for launching."¹²⁹ This was not contained in the Draft Declaration of Principles. These changes make it clear that the United States wished to establish a broad duty, limited to states, to provide assistance, and by excluding the expression "or otherwise as planned" from the Draft Declaration of Principles, sought to limit such an assistance rendering duty to conditions of accident, distress, or mistake. The December Draft Declaration of Principles made mention of the role of the launching authority rather than "State or States or international organization for launching." The duty to provide identifying data was added in the December Declaration of Principles while no duty to make compensation for assistance rendered was suggested. This latter aspect was a part of the earlier Draft Proposals because they would have established a duty on the part of persons, as well as states, associations of states, and international organizations, to engage in assistance activities.

The detailed United States Draft Proposals, September 11, 1962, may be compared with Articles 4 and 5 of the Draft Code for International Co-operation in the Peaceful Uses of Outer Space, submitted to the U.N. by the United Arab Republic in March 1962. These paragraphs proposed that:

4. Member States agree to provide every possible assistance to personnel of space vehicles who may be the subject of accident or experience conditions of distress or who may land by reason of accident, distress or mistake;
5. Member States shall undertake to return to the State or international organization responsible for launching space vehicles and their personnel.¹³⁰

These proposals are practically identical with the United States detailed Draft Proposals except, as noted above, the United States Draft Proposals in paragraph 3 took into account launchings by associations of states and made provision for payment of expenses incurred in providing assistance.

¹²⁹ *Ibid.*

¹³⁰ U.N. Doc. A/AC.105/L.6; U.N. Doc. A/AC.105/12, 7. Annex 14, *infra*, pp. 463-464.

The Soviet Union on September 10, 1962, also proposed a detailed Draft International Agreement on the Rescue of Astronauts and Spaceships Making Emergency Landings.¹³¹ This detailed Draft Agreement provided, in Article 1, that contracting states should assist crews involved in accidents, should rescue astronauts making emergency landings, and that states should use all means at their disposal in achieving this dual responsibility. Article 2 suggested that each contracting state which discovered a space vehicle accident should so notify the launching state without delay. Article 3 suggested that where there was an emergency landing in the territory of a state, the launching state should be notified and the discovering state should rescue and render assistance to the personnel. Under Article 4, each launching state was entitled to make application to contracting states to engage in joint search for astronauts in the event of a presumed emergency landing on the high seas. Pursuant to Article 5, the standard of care on the part of an assisting state was to be the same as it would render to its own personnel. Article 6 called for a state to "facilitate the early return to their own country of any astronauts of another Contracting State who may make an emergency landing on its territory or who may be rescued on the high seas."¹³²

Article 7 imposed the following limits on the duty to return space vehicles:

Foreign spaceships, satellites and capsules found by a Contracting State on its territory or salvaged on the high seas shall be returned without delay to the launching State if they have identification marks showing their national origin and if the launching State has officially announced the launching of the devices found.

Space vehicles aboard which devices have been discovered for the collection of intelligence information in the territory of another State shall not be returned.¹³³

The last operative article of the Soviet Draft Agreement suggested that expenses incurred by a state in fulfilling the obligations contained in Articles 6 and 7 were to be reimbursed by the launching state.

From the foregoing it will be seen that in 1962, the major resource states, supported by the United Arab Republic, were in general agree-

¹³¹ U.N. Doc. A/AC.105/L.3; U.N. Doc. A/AC.105/12, 3. Annex 15, *infra*, p. 464. This was submitted prior to the revised statement of principles of April 16, 1963. U.N. Doc. A/AC.105/C.2/L.6. Annex 16, *infra*, p. 466.

¹³² U.N. Doc. A/AC.105/L.3. Annex 15, *infra*, p. 464.

¹³³ *Ibid.*

ment that assistance should be rendered to astronauts endangered by accident or other peril. There was also a general consensus that space personnel and space vehicles should be returned, although the United States Draft Proposals of September 11, 1962, made reference of return to a state, states, or international organizations, whereas the Soviet drafts made reference only to launching states. Further, the Soviet Draft Declaration of Basic Principles, April 16, 1963, made reference only to the return of the space vehicle, whereas its earlier agreement, September 10, 1962, specified both personnel and space vehicles. Only the Soviet Draft Agreement contained a condition which would forestall the return of space vehicles (but not personnel), namely, the presence on such vehicle of intelligence information gathering devices. Both the United States detailed Draft Proposal and the Soviet detailed Draft Agreement made reference to reimbursement for expenses involved in providing assistance to or return of personnel and spacecraft, although neither indicated whether reimbursement was to be a condition precedent for such return. Insofar as the United States draft of September 11, 1962, called for the prompt return, and the Soviet Draft Agreement called for return without delay, it would be reasonable to believe that such reimbursement should not be regarded as a condition precedent for a return.

A major difference encountered between the detailed U.S. Draft Proposal and that of the Soviet Draft Agreement had to do with the entity entitled to assistance and return. The U.S. proposal consistently referred to a launching state, states, or international organization. However, the December 1962 United States Draft Declaration of Principles referred to return to the launching authority. The Soviets continued to propose that such rights as were under consideration belonged to states only.

To date the resource states have linked subjects of rescue and assistance of personnel and their return with the subject of return of space vehicles. It would appear that for manned spacecraft this is a practical approach, and, also, that the return of unmanned spacecraft might be regulated on the same basis as prescribed for manned vehicles.

These propositions have not received definitive analysis in the Legal Subcommittee of the Committee on Peaceful Uses of Outer Space, although careful attention has been given to this continuing problem. Enough has been said to point to the need for careful drafting of an ultimate convention on these subjects. The United States representative noted on April 16, 1963, that there had been general agreement on the limited subject "that every effort should

be made to assist and return astronauts in distress and that astronauts rescued by authorities other than the launching authorities should be safely and promptly returned.”¹³⁴ On April 24, 1963, he noted that paragraph 5 of the United States Draft Declaration of Principles made reference to the return of parts of space vehicles but that paragraph 10 of the Soviet Draft Declaration of Basic Principles made no reference to parts. He also observed that there was a difference between the United States Draft Declaration of Principles, which called for the return of space personnel in paragraph 4, and the Soviet paragraph 10, which failed to make mention of the matter. However, as previously noted, the detailed draft proposals of both states called for the return of personnel and vehicles.¹³⁵ Neither the Soviet Draft Declaration of Basic Principles nor the Soviet Draft International Agreement made any mention of the return of parts. The United States representative further observed that the U.S. view, as contained in paragraph 5 of the Draft Declaration of Principles, holding that a launching authority might be requested to supply identifying data (not contained in the United States detailed Draft Proposal), was in fact embodied in paragraphs 4 and 5 of the UAR draft and in paragraph 10 of the Soviet Declaration of Basic Principles.¹³⁶ Neither the UAR draft nor the Soviet Draft International Agreement made specific reference to this condition, and it is doubtful if the attribution to them was correct, although Article 7 of the Soviet detailed Draft International Agreement called for space vehicles to have identification marks showing their national origin.

The Soviet representative on April 19, 1963, spoke about the favorable prospect of arriving at an international agreement on the question of “assistance and rescue.”¹³⁷ It was his view that an agreement on this subject might take into account the principles contained in international agreements dealing with the rescue of and assistance

¹³⁴ U.N. Doc. A/AC.105/C.2/SR.16, 4. The term “launching authorities” may be construed to mean a state, states, or an international organization.

¹³⁵ *Supra*, pp. 458–460, 464–468. Resolution 1962 (7) and (9) (XVIII), which was unanimously adopted by the General Assembly of the United Nations on December 24, 1963, resulted from these early proposals. Annex 4, *infra*, pp. 450–452.

¹³⁶ U.N. Doc. A/AC.105/C.2/SR.20, 12.

¹³⁷ U.N. Doc. A/AC.105/C.2/SR.17, 8. This was based on the fact that “no serious objection had been raised ***” to the general principle of the Soviet’s paragraph 10 nor to the detailed draft. However, he asserted that it would be necessary to get agreement on the concepts contained in the Draft Declaration of Basic Principles before any specific agreement might be entertained. The same position was stated on May 2, 1963. U.N. Doc. A/AC.105/C.2/SR.25, 10.

to aircraft and vessels in distress and their personnel.¹³⁸ On May 2, 1963, in discussing the import of paragraph 10 of the Soviet Draft Declaration of Basic Principles, the Soviet delegate sought to enlarge and reconcile the subject of return of astronauts with the Soviet position as contained in the Soviet detailed Draft International Agreement. He brought into focus the Soviet position with respect to the return of the parts of space vehicles by saying, "Astronauts and the components of spaceships should assuredly be returned."¹³⁹ This new position, it must be remembered, must be interpreted in the light of restrictions and reservations contained in the detailed Soviet Draft International Agreement.

The Soviet representative, in linking the rescue and return of astronauts and space vehicles as a single subject, asserted that no detailed express convention on the subject could be arrived at until there had been agreement with the Soviet Draft Declaration of the Basic Principles Governing the Activities of States in the Exploration and Use of Outer Space.¹⁴⁰ As to the rescue and return of astronauts and space vehicles he stated, "treatment of the problem of return must be based on the principle that States retained their sovereign rights over objects they launched into outer space, and that rights of ownership in respect of objects launched into outer space and their components remained unaffected while in outer space or upon their return to the earth (A/AC.105/C.2/L.6, paragraph 8). The duty to render all possible assistance to astronauts and spaceships which might make an emergency landing was dictated not only by humanitarian considerations but also by the principle that the exploration and use of outer space should be carried out for the benefit and in the interests of the whole of mankind (*ibid.*, paragraph 1)."¹⁴¹

On April 26, 1963, the Japanese representative took note of an apparent consensus of the subcommittee which "seemed to be that space vehicles which landed outside the territory of the launching State should be promptly returned to that State."¹⁴² It would have been more accurate to state that the consensus favored assistance to personnel and return of personnel and spacecraft and parts, subject to United States or Soviet reservations, and that such return in the

¹³⁸ U.N. Doc. A/AC.105/C.2/SR.25, 10.

¹³⁹ This was also the view of the representative of Austria, who noted the availability of multilateral and bilateral agreements. U.N. Doc. A/AC.105/C.2/SR.16, 6.

¹⁴⁰ U.N. Doc. A/AC.105/C.2/L.6; U.N. Doc. A/AC.105/12. Annex 16, *infra*, p. 466.

¹⁴¹ U.N. Doc. A/AC.105/C.2/SR. 25, 11.

¹⁴² U.N. Doc. A/AC.105/C.2/SR.22, 12.

view of the United States was not limited to the Soviet view of states but also took into account other entities engaged in space activities, as groups of states or international organizations.

From this point of view the appraisal of the Argentinian representative appears to have been too narrow. He told the legal subcommittee that on the question of "assistance to and return of astronauts and space vehicles * * * a resolution should be prepared, stressing * * * the singular character of the astronaut as a civilian explorer of outer space and the duty of States to render him all possible assistance in the event of a forced landing outside the borders of the launching State."¹⁴³ On the other hand, the Austrian representative expressed the judgment that opinion had been "unanimous that the draft declaration of basic principles should contain the following principle [namely] * * * assistance should be accorded to space vehicles and their personnel in distress."¹⁴⁴ The Australian representative seems to have come somewhat closer to the views generally expressed when, in making an appraisal of the work of the subcommittee in April and May 1963, he suggested that "there was complete agreement in broad principle * * * that States should be under a duty to render all possible assistance to the personnel of a space vehicle landing by accident, distress or mistake and to return to the launching State both personnel and vehicle."¹⁴⁵

However, even here there was not complete agreement. As noted previously, the Soviet government, possibly for tactical purposes, insisted on formulating a broad statement of general principles on many subjects prior to negotiating a detailed agreement on assistance to astronauts in distress and return of astronauts, space vehicles, and component parts.¹⁴⁶ Further, the Japanese representative urged that states negotiating on this subject should take into account the prior notice of space launches. He stated that his delegation "did not consider it reasonable or appropriate to expect a nonlaunching State, within whose territory a space vehicle or its parts landed, to return such objects unless it had been given advance knowledge about the vehicles in transit or in orbit that might come down suddenly and without warning on its territory. The obligation of the nonlaunching States to return space vehicles should be conditional

¹⁴³ U.N. Doc. A/AC.105/C.2/SR.24, 10.

¹⁴⁴ U.N. Doc. A/AC.105/C.2/SR.28, 3.

¹⁴⁵ U.N. Doc. A/AC.105/C.2/SR.23, 3.

¹⁴⁶ *Supra* note 120, at p. 383.

upon the obligation of launching States to provide adequate information in advance.”¹⁴⁷

At the time the Committee on Peaceful Uses of Outer Space met in September 1963, a clarification of ideas relating to these subjects had resulted. According to the representative of the United States, such areas as “assistance to astronauts in distress” and “return of space vehicles and their personnel forced down by accidents or emergency” had reached the stage of “general agreement.”¹⁴⁸ The Soviet representative indicated that “Nobody raised any objections against such an important principle as the obligation of States to consider cosmonauts as emissaries of humanity into space and to give all possible help to space craft and their crews which have been forced down by accident on the territory of a foreign State or on the open seas, and also to return these space craft and their crews to the States which originally launched them.”¹⁴⁹ He also took note of the views advanced by several delegates that the proposed U.N. draft declaration on space law should “include a provision by which States, on the territory of which a space craft actually lands, could, before the return of the ship or the space craft, demand that identification should be given to it.”¹⁵⁰ In order to obtain a generally acceptable draft declaration, in view of the possibility that a universally acceptable one would not be forthcoming, he expressed approval for making reference to such identification in the declaration.

Although a pattern is in the process of developing whereby assistance to and return of personnel is being linked with the return of space vehicles and parts, the two subjects are in reality separate and distinct. The return of an astronaut after having been provided with varying forms of assistance, including the saving of his life from adverse elements, may be supported on basic principles of humanity.¹⁵¹ If he were a national of a state other than the state of launch,

¹⁴⁷ U.N. Doc. A/AC.105/C.2/SR.22, 12. He also suggested the possibility of improving the timing and contents reported by launching states to the United Nations Secretary-General pursuant to General Assembly Resolution 1721 B (XVI).

¹⁴⁸ U.N. Doc. A/AC.105/PV.20, 17-18.

¹⁴⁹ Ibid., 41-42.

¹⁵⁰ Ibid., 43.

¹⁵¹ Following the Soviet launch of Vostok V on June 14, 1963, and Vostok VI on June 16, 1963, a Department of State spokesman indicated on June 18, 1963 “that the United States would do everything it could to help rescue Soviet astronauts, should they come down in American territory. The department press officer * * * said he knew of no request by the Russians for such help.” *New York Times*, June 19, 1963.

operation, or use—or if he were a stateless person—he would still be entitled to receive all benefits accorded to those in danger or distress, and upon his own request might be expected to return to the place from whence he has departed. A launching or interested state or group of states engaging in joint space activities, or an international organization could be expected on humanitarian grounds to intercede with the state where he had come to rest or in the hands of whose authorities he might be found.

The return of a space vehicle or its parts would not rest on humanitarian grounds, but rather on property or possessory rights, although the Soviet drafts have made reference also to sovereign rights to return. Return of space vehicles is encumbered with security considerations which do not appear to be involved to any significant extent in the return of an astronaut. Thus, the Soviets have proposed that vehicles equipped for intelligence-gathering activities (presumably the entire vehicle, including the observational equipment) need not be returned, and this is urged despite the conflicting principle of a sovereign, property, or possessory right to the vehicle and its contents after launch. The Japanese view would permit the return of astronauts even though no advance notice as to the launch, operation, or use were conveyed to other states. However, under the Japanese proposal, a state would have no legal right to a return of a space vehicle or its parts in the absence of prior effective notification of a launching.

While custom and usage have not been given an opportunity to provide substance to this difficult political-legal problem, it is clear that the humanitarian analogies contained in the law of the sea and of airspace will unquestionably have an impact on state practice so far as assistance to and return of astronauts is concerned. Unilateral views of national interest will undoubtedly govern the problem of return of vehicles and parts until a practical condition of mutual benefit or advantage can be developed concerning such objects. When a joint recognition of such mutual benefits or advantages is clearly understood, it is expected that a workable express international agreement will regulate the return of vehicles and parts. The ongoing obsession on the part of the Soviet Union with secrecy and the gathering of observational data ("espionage" according to Soviet writers and governmental representatives) may make it difficult to achieve such an express agreement. However, this need not deter other states from entering into express agreements on these subjects.

In September 1963, the Chairman of the Committee on Peaceful Uses of Outer Space suggested that prospects were becoming increasingly more favorable for a resolution of the problems of assist-

ance to astronauts and return of both astronauts and space objects and their parts. The following Declarations were made in separate articles of the unanimous General Assembly Resolution of December 24, 1963:

7. [O]bjects [launched into outer space] or component parts found beyond the limits of the State of registry shall be returned to that State, which shall furnish identifying data upon request prior to return.

9. States shall regard astronauts as envoys of mankind in outer space, and shall render to them all possible assistance in the event of accident, distress, or emergency landing on the territory of a foreign State or on the high seas. Astronauts who make such a landing shall be safely and promptly returned to the State of registry of their space vehicle.¹⁵²

C. SATELLITES AND SPACE COMMUNICATIONS

The importance of this subject is seen in the fact that control over means of communicating can serve the national interest in many significant and effective ways. As a means of influencing the minds of men and their activities—by appealing to reason or emotion—its only serious rival is direct coercion. National security and well-being cannot afford to disregard the practical and legal implications of space communications.

The precise nature of permitted space communications is a significant part of the larger problem of defining the substance of the concept of “peaceful uses of outer space.” Although, as pointed out above, this concept or principle has received the approval of nations, there still remains the very considerable task of developing reasonable working rules and legal standards for specific aspects of legally permitted conduct.

With the advent of communications by satellite, either passive or active, as well as reliance on radio and other devices to control vehicles already in outer space, additional international efforts have been initiated. The public international organizations, through which major efforts have been undertaken to maximize space communications and to provide a structured legal regime therefor, have been the International Telecommunications Union (ITU) and the United Nations. COSPAR, the private scientific consultative body, has also begun to play an important role in this field.

¹⁵² U.N. Doc. A/RES/1962 (XVIII). Annex 4, *infra*. p. 450. Compare, U.N. Doc. A/AC.105/PV.20, 7. The use of “promptly” in paragraph 9 calls attention to the fact that such a qualification is lacking in paragraph 7.

When the regulation of communications in outer space is compared with other types of space control, one is immediately forced to take account of the long experience and ongoing technical qualifications of the ITU. Since 1947 it has had the assistance of its International Frequency Registration Board (IFRB) and its International Radio Consultative Committee (CCIR). The ITU has already assumed a key role in radio communications in outer space and has undertaken the important responsibility of assisting in the assignment of radio frequencies.¹⁵³

Before analyzing the legal problems affecting space communications, it is necessary to identify uses, users, and major problems. Major uses of telecommunications facilities fall into three primary classes, namely, commercial, military, and scientific. These involve the use of such specific facilities as radio, television, data transmission, telephone, and telegraph. All involve the rapid dissemination of information over immense distances. These capabilities, when applied to active or passive satellites or other space vehicles, permit the performance of such vital functions as tracking, guidance, radio positioning, telemetering, and increasingly accurate control. Additionally, the techniques of radio astronomy have made it possible to acquire scientific data from the wide and distant ranges of space.

The users of space communications include not only the resource states which have demonstrated an ability to launch, operate, and use space vehicles, but also a great variety of public and private entities which have already participated, in varying degrees, in the management of space communications. These include states, associations of states, international organizations, and private legal persons (private companies, corporations, and individuals). The latter engage in both national and international activities and a great variety of forms are employed in any single state. In the United States, for example, there are both private and public communications operations, and combinations thereof, and it may be possible to have both military and nonmilitary management of them. In other states, exclusive military management may be the preferred operational technique. Even where states monopolize this function, however, operations are frequently carried on by both civil and military administrations.

The development of space communications coincidental with the development of space vehicles has added new, but not necessarily

¹⁵³ *Infra*, pp. 396-400. The IFRB engaged in technical preparations for the 1963 Extraordinary Administrative Radio Conference on Space Communications, and the CCIR through its Study Group IV has engaged in special studies of space telecommunications systems and of radio astronomy.

dissimilar, problems from those communications problems experienced in the past. With the development of spacecraft there has become a greater awareness of the need to use space communications. This awareness has presented a finite situation disclosing the need for careful commercial, scientific, and military analyses of all factors which must be considered in assigning radio frequencies.

The entire regime of world-wide communications was constructed on the basis of seeking to avoid harmful interference. However, with the advent of the space vehicle, the Soviet Union began to use radio frequencies previously assigned to other users. This resulted in impaired reception and impeded radio astronomy. Furthermore, capabilities for jamming foreign broadcasts either at source or at the point of reception have long existed. The impact of these factors upon military security and the needs of national self-defense, has not gone unnoticed. In addition to the problem of frequency assignments which will be beneficial to states, there has also been the problem of effecting allocations between differing uses within a given state, i.e., commercial, scientific, and military. Making acceptable assignments of frequencies at an early stage is necessary in order that suitable equipment capable of performing a variety of assigned technical tasks may be manufactured. Confusion as to assigned frequencies—or worse yet, no assignment at all—would defeat the maximum beneficial use of space communications facilities.

The seriousness of these problems was noted by Congressman Brooks, in 1961, when he stated in referring to the allocation of radio frequencies for space use: "Frequencies have been used in violation of treaty provisions, and transmissions have continued, interfering with normal communications, long after their purpose had been served. Looking to the future, we can see a coming 'war' of the radio-frequency spectrum. In effect, the spectrum is a scarce natural resource, already overloaded, which will be required to carry more and more traffic. The growing overload will come not only from military but from scientific and commercial use. Rapid communications will be needed among an increasing number of points for production, transportation, and other economic activities. In outer space, unless agreement is reached on frequency allocations, the information acquired by difficult and costly experiments may well be lost."¹⁵⁴

¹⁵⁴ Brooks, "The Place of Government in the Utilization of Space," in Ramo, ed., *supra* note 2, at 209. The ITU's role with respect to radio frequencies is that of a coordinator rather than a manager of details. The conventions dealing with radio divide states into regions in such a way as to avoid the prospect of national interference. They also divide various kinds of services, such as amateur, broadcasting, or maritime mobile. Over-all frequency bands are allo-

Haley has documented the early Soviet use of frequencies at 20.005 and 40.002 megacycles in connection with Sputniks I and II which were launched in 1957. He has observed that "The first departure from the rules and regulations promulgated pursuant to international treaties, was occasioned by the USSR's use of the frequencies of 20.005 and 40.002 megacycles (mc)." ¹⁵⁵

The magnitude of the difficulties resulting from failure to conform to frequency allocations has been commented on by many authorities. Mr. Frederick R. Kappel, president of the American Telephone and Telegraph Company has stated:

These questions are both domestic and international. Some of the most crucial arise from the fact that to communicate via satellite it is necessary to use radio frequencies in huge quantities. The radio-frequency spectrum is of course a natural resource, and the frequencies that can be used for satellite communications are limited. The best area is from roughly 1,000 to 15,000 megacycles, with some possibility also of using the range from 15,000 to 20,000. In the extremely high frequency range, rain blocks off transmission. In the lower range, sky noise increases, and besides, big bundles of frequencies are already in use.

cated to the various services with an indication as to whether they may be used world-wide or regionally. States make the detailed assignments to users within their respective jurisdictions, and this decision is the product of regional agreements among adjacent states. There are three ITU regions, i.e., Region I, Western Europe, U.S.S.R. and Africa; Region II, the Western Hemisphere; and, Region III, Asia excluding the Soviet Union. In order to avoid frequency interference the ITU has sought to allocate nonadjacent bands in the spectrum to different kinds of service. Thus, the major processes to avoid interference are to grant spectrum occupancy on the basis of region and frequency. Another means is to effect allocations for fixed periods of time of broadcast. With the advent of the space age the ITU, in 1959, designated "use" as another basis for allocation, and made reference to allocations for space research.

¹⁵⁵ Haley, "Space Age Presents Immediate Legal Problems," *First Colloquium* 14. He said "On no occasion did the USSR apply to the appropriate agencies of the International Telecommunication Union at Geneva for permission to use the frequencies * * *. [t]he appropriate agencies of the * * * Union were not officially notified of the use of these frequencies by the Sputniks." *Ibid.* 15. The Soviet Union is a member of ITU. Compare, Haley, "Law of Outer Space—Radio Controls Urgently Needed," *Space Law, A Symposium* 458; Haley, "A Basic Program for the 1963 Extraordinary Administrative Radio Conference on Space Communications," *Legal Problems of Space Exploration, A Symposium* 694-695; Bloomfield, "The Prospects for Law and Order." in Bloomfield, ed., *Outer Space* 169 (1962).

Obviously, satellite communication systems must not interfere with each other, and matters must also be arranged so that other uses of microwave radio—uses that have nothing to do with satellites—will not interfere with and overpower the faint signals from space.¹⁵⁶

From the point of view of limitations imposed on pure research, the views of Goldberg are pertinent. He has said that "Man-made interference caused by radio transmitters on the earth and in satellites constitutes the most serious kind of threat to radio astronomy from which it may be possible to escape by putting radio astronomy observatories on the other side of the moon."¹⁵⁷ In order to forestall unreasonable radio interferences with space activities, the United States Navy has engaged in the use of intricate electronics systems to detect radio interference with satellite launching operations. Naval aircraft "make antenna pattern and/or miscellaneous field strength measurements, using radio interference and field intensity meters with associated open recorders, in their primary role as frequency interference control."¹⁵⁸

Interference with assigned frequencies may take several forms. It may be the product of inadequate equipment so that broadcasts are unable to maintain the allocated wave lengths. The interference may result even when suitable equipment is used because of a belief that broadcasts on shared frequency assignments will be minimal as a result of distances between broadcast points or other considerations. On the other hand, the interference may be intentional—i.e., jamming. Jamming may take several forms such as efforts to prevent reception of broadcasts in the territory of the state doing the jam-

¹⁵⁶ Kappel, "Communications in the Space Age," in Ramo, ed., *supra* note 2, at 52; Compare, Berkner, "Space Research—A Permanent Peacetime Activity," in Ramo, ed., *supra* note 2, at 4.

¹⁵⁷ Goldberg, "Studying the Universe from a Space Platform" in Ramo, ed., *supra* note 2, at 130. The conflict between scientific and commercial uses of radio frequencies comes into focus with regard to radio astronomy research, particularly when conventional radio services may be requested to vacate assigned bands with the possible abandonment of costly equipment. This in turn would require difficult negotiations to establish new commercial frequencies. "Policy Planning for Space Telecommunications," and "Radio Frequency Control in Space Telecommunications," *Committee on Aeronautics and Space Sciences*, U.S. Senate, 86th Cong., 2nd Sess., 1960. For two important recent studies of space communications see Haley, *Space Law and Government* 159-232 (1963), and Reiger, Nichols, Early and Dews, *Communications Satellites: Technology, Economics, and System Choices* 1 (1963).

¹⁵⁸ Cantwell, "Pacific Missile Range," 5 *Navy, The Magazine of Sea Power* 25 (December 1962).

ming, or in other areas. This may be accomplished either by jamming the broadcast at its source or at the point of reception. Jamming radio transmissions passing through superjacent airspace or outer space in order to forestall receipt of the broadcast by the intended receiver is also possible—especially when the intended receiver is situated at a place other than on the surface of the earth or within the territory of the jamming state. Such efforts are generally considered to be politically motivated and reflect the protection of such important national interests as peace, security, self-defense, ideological preferences, and perhaps others. Such efforts contribute to closed societies.

Important legal considerations condition and affect jamming procedures. Where nationally licensed broadcasts fail to conform to ITU promulgated frequencies, either by reason of inadequate broadcast equipment or by reason of intentional departure from such allocations, a *prima facie* case of breach of treaty or convention would exist. As in any other express agreement, the principle of *pacta sunt servanda* would be applicable. A state having received frequency allocations has the duty to require all operators within its territory—licensed or unlicensed—to conform to such allocations and to its implementing national laws. Frequency allocation agreements, being based on the exchange of bargained benefits and detriments, constitute the basis for valid rights and duties.

The 1959 Geneva ITU Radio Regulations promulgated frequency assignments for space and earth-space services. These were restricted to use for research purposes only, and no definition of research was made.¹⁵⁹ However, these frequencies were typical in that they were allocated subject to a duty to avoid “harmful interference to the services rendered by the stations of another country.”¹⁶⁰ In this regard, it has been suggested that research purposes would not include “navigation, weather reporting, and commercial communications.”¹⁶¹

¹⁵⁹ *ITU Radio Regulations and Additional Protocol, Geneva 1959*, TIAS 4893.

¹⁶⁰ *Ibid.*, Article 3 “General Rules for the Assignment and Use of Frequencies,” especially paragraphs 113-117. As noted previously, the duty to avoid “harmful interference” with frequency assignments is fundamental to regulated broadcasts.

¹⁶¹ Estep and Kearse, “Space Communications and the Law: Adequate International Control after 1963?” 60 *Michigan Law Review* 887 (1962). The authors qualify the foregoing by observing, “It has been suggested that these systems would not be forbidden *per se*, but merely would not be given protection and would be required to protect from harmful interference the services operating according to ITU Radio Regulations. See Glazer, “The Law-Making Treaties of the International Telecommunication Union Through Time and in Space,” 60 *Michigan Law Review* at 290, n. 72. *Ibid.*, 887, n. 63.

The 1959 Regulations also made provision for the enforcement of allocations. Article 15 is entitled "Procedure in a Case of Harmful Interference," and Article 16 deals with "Reports of Infringements." When the infringed-upon state notifies the infringing state of an interference, the latter is obliged to stop the interference. If the infringing state does not end the interference, paragraph 716 of Article 15 provides that "the administration concerned shall forward details of the case to the International Frequency Registration Board for its information."¹⁶²

Since harmful interference may be intentional as well as unintentional or accidental, and since the ITU possesses no effective coercive means to forestall or eliminate such unpermitted conduct, injured states and other users are obliged to look elsewhere for the effective redress of grievances. Outer space communications are complicated by the fact that space vehicles may be manned as well as unmanned, and harmful interference with communications by anyone for whatever cause could seriously prejudice the life of the astronaut, as well as the success of his mission. There would be little time to resolve the matter in a judicial or quasi-legislative-executive forum, such as the World Court or the United Nations. Reciprocal conduct against the entity engaging in or permitting the interference might not be possible, if it did not have the same or similar kind of satellite in orbit. Jamming of the interfering broadcast would probably not be helpful, but might, in fact, make communication with the subject astronaut or space vehicle all the more difficult. Meticulous adherence to assigned frequencies, based on the expectation of reciprocal benefit, would seem to be required under such circumstances. The easy availability of unilateral measures will provide for respect for spectrum allocations.

On the other hand, where there is a grave suspicion on the part of a state that the space vehicle—either manned or unmanned—is engaged in a nonpeaceful purpose, i.e., an aggressive and nonbeneficial activity, then a form of radio interference would unquestionably be considered to be a minimum reasonable response to the actual or apparent harm to national security. Under the assumed condition of extreme provocation, it is clear that even more drastic action would be permitted to the threatened state on the basis of its inherent right of self-defense.

¹⁶² TIAS 4893. Pursuant to Article 9, Section VII, the Board may make studies and recommendations. The aggrieved state may, under certain conditions, be able to obtain new frequencies. Neither the Board nor the ITU is equipped to prevent a state from continuing a harmful interference.

However, a more difficult problem is to determine under what conditions, if any, there may be a legal interference with radio broadcasts, either to or from space vehicles, when there appears to be no reasonable prospect of aggressive national conduct. The Soviet position relating to purported propaganda broadcasts has already been noted.¹⁶³ Further, the Soviet Union has recorded its opposition to observational activities of space vehicles, and has labeled such conduct "espionage," and has put forward a view—generally unsupported—that such observational activity is in violation of international law.¹⁶⁴ Jamming would most probably be resorted to in both instances, but probably with less practical effect in the latter instance because space vehicles can store up recorded data for transmissional release upon command under favorable circumstances. However, it may be anticipated that, as time goes on, technological means may be used to forestall either the storing or the read-out processes.

Some guidance may be obtained on this issue from the work of the United Nations and from customary international law. The report of the *Ad Hoc Committee on the Peaceful Uses of Outer Space*, July 14, 1959, assigned a high priority to the allocation of radio frequencies for peaceful space uses. It stated:

13. It was recognized that there are stringent technical limits on the availability of radio frequencies for communications. The development of space vehicles will pose new and increasing demands on the radio spectrum. It was emphasized that rational allocation of frequencies for communications with and among space vehicles would be imperative. In this way, what might otherwise come to constitute paralysing interference among radio transmissions could be avoided.

15. Attention should also be given to the desirability of terminating transmissions from space vehicles once these transmissions have outlived their usefulness. Such a measure would help conserve and make optimum use of the frequencies which are assigned for space communications. In considering this problem, it would be necessary to balance this factor against the interest in conserving a means for continuous identification of space vehicles.¹⁶⁵

¹⁶³ *Supra*, pp. 271–275, 295–300.

¹⁶⁴ *Supra*, pp. 271–295, 368.

¹⁶⁵ U.N. Doc. A/4141, 24. Annex 20, *infra*, p. 472. Paragraph 14 called attention to the capabilities of the ITU. With respect to signals emanating from spacecraft, it is generally thought that these may be given a life of many hundreds of years.

Implementation of these recommendations has become the special responsibility of the U.N. Committee on Peaceful Uses of Outer Space. It has sought to stress the need for a structured legal regime for space communications by receiving national proposals and through discussions which have been largely conducted in its scientific and technical subcommittee. The proposed principles have been formulated in the most general terms, unlike proposals for the rescue of astronauts, apparently based on the view that the ITU is responsible for promulgating detailed regulations.

Thus, the United States Draft Declaration of Principles Relating to the Exploration and Use of Outer Space, December 8, 1962, commends to states for their guidance that:

1. Outer space and celestial bodies are free for exploration and use by all States, on the basis of equal rights, in conformity with international law; [and]
2. In the exploration and use of outer space and celestial bodies, States are bound by the relevant rules of international law and the relevant provisions of international treaties and agreements including the Charter of the United Nations.¹⁶⁶

By reference to international agreements, the provisions of the ITU conventions dealing with harmful interference must be taken into account. Furthermore, under the Charter considerations affecting the maintenance of international peace and security and self-defense must also be considered as applicable.

The Draft Declaration of Basic Principles Governing the Activities of States Pertaining to the Exploration and Use of Outer Space submitted by the United Kingdom on December 4, 1962, also has general relevancy. Article 1 provided:

Outer space and celestial bodies are free for exploration and use by all States in conformity with international law. This freedom shall include free navigation by means of space vehicles, the establishment of space stations and other like devices, the conduct of scientific research, and the landing on and exploration of celestial bodies, and shall be exercised by all States with due regard to the interests of other States in the exploration and use of outer space, and to the need for consultation and co-operation between States in relation to such exploration and use.¹⁶⁷

The U.K. proposal also noted the applicability of the Charter, international law, and "other international agreements which may be

¹⁶⁶ U.N. Doc. A/C.1/881. Annex 10, *infra*, p. 459.

¹⁶⁷ U.N. Doc. A/C.1/879. Annex 18, *infra*, p. 469.

applicable,"¹⁶⁸ This proposal has taken into account the practical problems involved in the use and exploration of outer space, and clearly indicates that space activities can not be conducted successfully without employing adequate and effective communications facilities. While due notice is taken of the role of the ITU, the affirmative need to protect, facilitate, and enlarge space communications capabilities is recognized in this draft.

The draft Code for International Co-operation in the Peaceful Uses of Outer Space submitted by the United Arab Republic in March 1962, also broadly suggested principles respecting space communications. The Code sought to establish the following points for guidance:

1. The activities of Member States in outer space should be confined solely to the peaceful uses;
2. In their policies toward outer space Member States should promote international peace and co-operation.¹⁶⁹

The general tenor of these three proposals favors the broad use of outer space for peaceful purposes, and subsumes the fact that effective use must take into account the presence of adequate communications facilities. All illustrate a strong conviction that activities undertaken must be based on a reciprocity of interests, including due regard for the interests of others.

The Soviet Draft Declaration of the Basic Principles Governing the Activities of States in the Exploration and Use of Outer Space, as amended in April 1963, incorporated many of the points noted in the United States, United Kingdom, and UAR proposals. However, no reference was made to the applicability of pertinent international agreements other than the U.N. Charter. Two Soviet views call for special comment. First, paragraph 5 provided that "The use of outer space for propagating war, national or racial hatred or enmity between nations is inadmissible."¹⁷⁰ As noted previously, this suggestion is based on the Soviet policy of maintaining a closed society, and involves the very serious legal difficulty of realizing an acceptable internationally sponsored definition of the substance of "propagating" or "propaganda."¹⁷¹ Second, paragraph 6 of the Soviet proposal contained the following language: "Any measures that

¹⁶⁸ *Ibid.*

¹⁶⁹ U.N. Doc. A/AC.105/L.6. Annex 14, *infra*, p. 463.

¹⁷⁰ U.N. Doc. A/AC.105/C.2/L.6. Annex 16, *infra*, p. 466. The earlier Soviet views are contained in U.N. Doc. A/AC.105/C.2. Annex 21, *infra*, p. 480.

¹⁷¹ *Supra*, pp. 221-229, 271-275, 295-300.

might in any way hinder the exploration or use of outer space for peaceful purposes by other countries may be implemented only after prior discussion of and agreement upon such measures between the countries concerned.”¹⁷² While this provision was apparently aimed at the West Ford copper needle project of the United States,¹⁷³ it might also serve as a means of forestalling and interdicting harmful interference with peaceful uses of communications facilities in outer space.

General Assembly Resolutions relating to the peaceful uses of outer space have not made specific provision for communications practices by space vehicles. Nonetheless, Resolutions 1721 (XVI), 1802 (XVII), and 1962 (XVIII) anticipated the fullest use of communications capabilities for the successful use and exploration of outer space. Thus, the 1961 Resolution of the General Assembly, 1721 (XVI), announced support for the ITU’s program of allocating radio frequencies for outer space activities and expressed the belief that communications by “means of satellites should be available to the nations of the world as soon as practicable on a global and non-discriminatory basis.” At this time the U.N. also expressed an interest in an effective communications system so that the organization and the specialized agencies might employ such facilities for operational and informational requirements.

The 1962 Resolution 1802 (XVII), also recognized the role of the ITU in the advancement of efficient space communications. The Resolution took account of the fact that “communication by satellite offers great benefits to mankind, as it will permit the expansion of radio, telephone and television transmissions, including the broadcast of United Nations activities, thus facilitating contact among the peoples of the world.” In 1962, as in 1961, the General Assembly acknowledged that it was of utmost importance that the ITU allocate radio frequency bands for space facilities adequate to meet expected outer space needs.

With this encouragement the Space Radio Communication Conference of the ITU, officially known as the Extraordinary Administrative Radio Conference of the International Telecommunica-

¹⁷² U.N. Doc. A/AC.105/C.2/L.6.

¹⁷³ *Supra*, pp. 302-304, 314. The Soviet Union like the United States, has engaged in high-altitude nuclear tests. The United States has, through its Argus experiment, obtained data related to military activities. The problems of reviewing in advance with the international scientific community prospective experiments is considered in a study conducted by the United States Space Science Board. “A Review of Space Research,” Publication No. 1079, National Academy of Sciences-National Research Council 16-14, 16-15 (1962).

tion Union to Allocate Frequency Bands for Space Radio Communications, met in Geneva in October and November 1963. The purpose of the conference has been described by Congressman Harris of Arizona, who attended, as seeking to "secure agreement internationally with respect to the allocation of frequencies in the radio spectrum for satellite communications, space research, navigational satellites, meteorological satellites, telecommand, telemetry, tracking of space vehicles, amateur radio, and radio astronomy."¹⁷⁴

The achievements of the conference were noted by President Kennedy on November 20, 1963, at which time he called attention to the fact that frequencies had been allocated for the foregoing purposes and that procedures had been adopted governing the use of such frequencies.¹⁷⁵ The American delegation concluded that the various allocations were necessary to the development of a single global commercial space communications system, with nondiscriminatory access open to all nations, as well as to the advancement of the foregoing space needs.¹⁷⁶

The conference agreed to set aside 2800 megacycles for communications satellite services, some 1200 more than initially suggested by the Soviet Union. Further, the conference decided that such allocations should be available for immediate use, subject, as was typical, to the monitoring of actual use by the ITU's International Frequency Registration Board.¹⁷⁷

Ambassador Joseph H. McConnell, chairman of the United States delegation, summed up the need for an effective international understanding on frequency allocations when he stated that the "orderly development and operation of the space programs of the United States and other nations will depend in large measure on the agreements reached at this conference. Adequate communications, protected from harmful interference, are essential to continued progress."¹⁷⁸ Regrettably, for the first time in the history of international radio regulation a Western Hemisphere (region 2) nation (Cuba), refused to accept the radio frequency allocations agreed to by other Western Hemisphere nations. According to Ambassador

¹⁷⁴ 110 *Congressional Record* 160 (January 9, 1964).

¹⁷⁵ *Ibid.* Radio astronomy was allocated exclusive use of the 1400-1427 Mc/s band. *ITU Press Release* 51, (October 29, 1963).

¹⁷⁶ *Ibid.*

¹⁷⁷ *Ibid.*, 162.

¹⁷⁸ The communication-satellite service allocation, consisting of 2,675 megacycles on eleven bands, almost all of which must be shared with existing services, is set forth for regions 1, 2, and 3 at *ibid.*, 170. The Western Hemisphere consists of region 2.

McConnell, the United States was reluctantly obliged to file a reservation to the Cuban action. He stated that "because of important radio and space operations in the Caribbean area which are dependent upon frequency bands agreed to throughout the hemisphere, the U.S. delegation could not place the United States in the position of having to honor Cuban radio operations which do not conform to the frequency allocations acceptable to all other delegations from region 2." ¹⁷⁹

The December 24, 1963 Resolution of the U.N. General Assembly, 1962 (XVIII), expressed only in general terms that body's substantial interest in an effective system of communications with space objects. Nonetheless, the 1963 principles which had been the product of extended discussion and consideration over a period of years included the solemn declaration that "4. The activities of States in the exploration and use of outer space shall be carried on in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding." The liability provisions of the 1963 Resolution asserted that states bear "international responsibility for national activities in outer space, whether carried on by governmental agencies or by non-governmental entities * * *. The activities of non-governmental entities in outer space shall require authorization and continuing supervision by the State concerned." Paragraph 8 of the resolution provided that where a space object causes harm a condition of international liability for damages will exist. Although no discussions, other than on the subject of propaganda, have been held relating to the harms resulting from an improper use of communications on board such an object, as contrasted with the object *per se*, it could well be that this principle is adequate to cover situations other than those of physical collision or impact directly causing harm or damage.

Further, Article 6 of the 1963 Resolution sets forth the principle that "In the exploration and use of outer space, States shall be guided by the principle of co-operation and mutual assistance and shall conduct all their activities in outer space with due regard for the corresponding interests of other states." At the very least this would require consultation between states as to the prospect of misuse of

¹⁷⁹ The United States indicated in the additional protocol, as a part of the final act of the conference, its declaration that it could not accept "any obligation to observe the exception claimed by Cuba in those footnotes to the table of frequency allocations which were adopted by the present conference and which specifically named Cuba." *Ibid.*, 173.

allocated radio frequencies and communications systems. The ITU provides an institutional means whereby cooperative procedures may be used in order to maximize radio and other communications facilities in outer space.

However, as is well known, the Soviet government has demonstrated much concern that radio broadcasts might carry propaganda type information. Although assurance against such conduct was announced as a principle of acceptable space conduct in the 1963 General Assembly Resolution, it has been the practice of some states, including the Soviet Union, to engage in jamming procedures for ground-to-ground radio broadcasts.

At this time there appears to exist some doubt as to what type of "material" may be broadcast and what type of transmissions a receiving state may object to. Until such details can be agreed upon, it would appear that the traditional practices will continue, namely, states will accept responsibility for maintaining circuit discipline, thereby preventing and punishing gross distortions which might result in loss of life at sea, in the air, or in outer space, but they will continue to determine for themselves the content of broadcasts which will remain unregulated and uncensored. Receiving states confronted with policies of secrecy and with accentuated notions of a communications "right of privacy" will endeavor to engage in jamming procedures to prevent broadcasts coming down to them from outer space. Other states may endeavor to interdict transmissions through their airspace.

The vagueness of the legal situation is suggested by Estep and Kearse who have analyzed the customary international law inhibiting "transgression by radio-waves."¹⁸⁰ It is their conclusion that it is an "accepted principle of customary international law that a state has the right to object to transgression of its territory of offensive radiowaves of foreign origin."¹⁸¹ The means of protest according to these authors are restricted to diplomatic protest or to interference with the transgressor's radio signal, e.g., by jamming. In this connection they state:

The latter is the state's only unilaterally effective means of enforcing its sovereign right to exclude a signal from its territory. The right to jam bears with it the duty, so far as possible,

¹⁸⁰ Estep and Kearse, *supra* note 161, at 876. A dictionary definition of "transgression" suggests "violation, infringement, breaking" and a "transgressor" as one who has "stepped across." These authors have explored the writings of Briggs, Hyde, Jessup and Taubenfeld, Lauterpacht-Oppenheim, and Stenuit, *ibid.*, at footnotes 8-10.

¹⁸¹ *Ibid.*

not to transmit with so much power that reception of the signal is prevented in other states; however, it has been suggested that if reception in other innocent states is interrupted unavoidably, the right to jam has not been abused. Moreover, a state is entitled to jam an offending signal even though its jamming signal must obliterate radio communication on that frequency within the territory from which the transmission emanates.¹⁸²

These authors suggest two theories on which a state could support jamming in order to inhibit the presence within the responding state of offensive radiowaves of foreign origin. Under the first theory, jamming would be a valid national response to the invasion by a foreign state of its sovereignty in its superjacent airspace. Under the second, such jamming might be undertaken in the interests of national security, based on the premise that a state may punish crimes against its security even though they may be instituted outside of the territory of the harmed state.

The first theory is regarded as inadequate by its proponents who argue that "to base the right to jam solely on the ownership of airspace is to assume a context artificial for the purposes of regulating radio transmission. Since radiowaves do not in fact observe airspace as a controlling boundary, airspace alone should not govern the right to use or jam them."¹⁸³ Whatever the merit this theory may possess for airspace, it is completely inapplicable in the present context, since the airspace is not outer space, and different legal conditions prevail. While states exercise sovereign control over their superjacent airspace, it is generally recognized that outer space is *res communis omnium*. As such, like the high seas, it is available to all for peaceful use, and subject to such controls as may be established under international law. The theory is also inadequate to the needs of space law in that it deals with radio broadcasts emanating from the territories of states, whereas much radio broadcasting affecting outer space and terrestrial areas will emanate not from land, on the sea, or in the air, but will come from very distant points in outer space.

The theory of protecting national security by means of jamming appears to be a sounder one, particularly when there has been a careful delineation of occasions where collective action will be preferred over unilateral action. The security theory focuses on the

¹⁸² *Ibid.* It is their view that the jamming by one state of another state's internal radio broadcasts at a time when radio was the only available means by which a government could communicate with its own nationals at home is a clear violation of international law.

¹⁸³ *Ibid.*, 877.

nature or quality of the signal rather than the place from whence it emanates or the medium through which it passes. Thus, if a radio signal or a series of them were to constitute a grave and unacceptable threat to the security of a state, the inherent right of self-defense recognized in Article 51 of the U.N. Charter could be relied on in support of the response by jamming.

Pursuant to this theory, the response by jamming might be instituted against the unpermitted signal after transmission had been initiated and, on the basis of all reasonable facts, might also be employed in a preventive or precautionary manner prior to any actual transmission. It has been suggested that the direct jamming of another state would result in a violation of the latter's sovereign rights.¹⁸⁴ However, this need not impose a paralyzing limitation upon the state which is seeking to protect itself. The fact that legal principles appear to be opposed to each other merely calls for the impressing of significant values on such principles so that no unreasonable or unpermitted harm need befall any state. This is recognized by Estep and Kearse who state that "Only if the offending broadcast were an act of the other government or condoned by the government would it seem that a direct jamming of the transmission would not constitute a breach of the duty * * * not to infringe on the sovereignty of another state."¹⁸⁵

Where the offending broadcast is initiated from a satellite in outer space, and jamming is applied to such a transmission, it would appear that there would not be an infringement on the sovereignty of the broadcasting state. This is true even though there seems to be general agreement that the launching, operating, or using entity retains both property and possessory rights in the orbiting vehicle both while it is in space as well as when it has come to rest on land or water surfaces of the earth. The same legal principle of security would apply to radio spectrum management involving the transmission of signals from within one state to another and to transmissions from one operating satellite to another, or to the earth. Since the product of effective interruption of communications is the same whether the transmission is initiated on or within the territory of a state or in outer space, the legal result should also be the same. This can be realized by recognizing the inherent right of self-defense. It might also be supported by the right to maintain international peace and security. The right in this context would be implemented by recognition of the power to jam unreasonable broadcasts both because of the substance and because of use of nonauthorized broadcast

¹⁸⁴ *Ibid.*, 878.

¹⁸⁵ *Ibid.*

bands. The provocation would have to be actual, or imminently threatened, aggressive conduct; the responsive defensive action would have to be reasonable and proportionate to the threat.¹⁸⁶

The prospect that states may deem it necessary to engage in the jamming of broadcasts to and from satellites in outer space is so bleakly probable that many commentators have called for the negotiation of express agreements specifically relating the principle of peaceful uses of outer space to such broadcast capabilities. These proposals are based on the premise that there is a need to improve the existing self-enforcing terms of the ITU Radio Regulations, which largely depend upon disruptive radio conduct as a response to nonconformity on the part of a violating state.

Proposals for a structured legal regime in outer space for radio, resulting from the employment of satellite communications, place central emphasis on the duty of launching states to register satellites and satellite radio data with the United Nations. Glazer has suggested the following considerations:

In order to qualify for the protections set forth in the ITU Convention and Service Regulations, nations involved in launching space vehicles would be required to furnish the United Nations with technical details of the vehicles or systems to be launched and their intended purposes. Upon approval of such purposes, the United Nations would 'register' the vehicle or system. Radio signatures for 'registered' vehicles or systems would be provided by the ITU and the vehicles or systems identified in an official international document through publication of their frequencies, and their orbital and other technical characteristics. Vehicles or systems not 'registered' by the United Nations would be deemed by operation of law as containing 'military radio installations,' and as such not entitled to protection from harmful radio interference whether caused deliberately or unintentionally. Abuses caused by 'registered' vehicles or systems could be corrected by revoking through notice and publication their international radio signatures, after exhaustion of administrative due process and a right of appeal to the International Court of Justice.¹⁸⁷

Furthermore, Haley has summarized this need by stating that "Within the framework of the pertinent international treaties, lawful use

¹⁸⁶ For a more detailed development of this rationale see *supra*, pp. 341-351.

¹⁸⁷ Glazer, *supra* note 161 at 314-315. Compare McDougal and Lipson, "Perspectives for a Law of Outer Space," 52 A.J.I.L. 430-431 (1958); Estep and Kearse, *supra* note 161 at 894-899.

must be made of radio frequencies for all forms of astronautical communications.”¹⁸⁸

Efforts have been made to bring into focus in international forums the serious problems confronting the users of space communications in their varied scientific, commercial, and military uses. As reported above, the General Assembly of the United Nations on December 20, 1961, in the well-known resolution entitled “International Co-operation in the Peaceful Uses of Outer Space,” took into account the fact that communication “by means of satellites should be available to the nations of the world as soon as practicable on a global and non-discriminatory basis.”¹⁸⁹ The resolution took note of the need for effective communications by space satellites, the role of the ITU in conjunction with such international organizations or agencies as the U.N.’s Special Fund, the Expanded Program of Technical Assistance, UNESCO, and COSPAR. The resolution expressed the satisfaction of the General Assembly that in 1963, the ITU would hold a special conference “to make allocations of radio frequency bands for outer space activities.”¹⁹⁰ As a result of the resolution the ITU has prepared reports for the U.N. Economic and Social Council and for the General Assembly. These reports have been made available to the Committee on the Peaceful Uses of Outer Space, and on several occasions a representative of the ITU has appeared before the latter committee or the First Committee to explain the objectives of the 1963 ITU Extraordinary Administrative Radio Conference. On one occasion the ITU representative referred to the 1963 conference as a technical one and that the “technicians of the various members of the Union who will participate in it will obviously be experts on frequency assignments, which, of course, is the prime object of the conference.”¹⁹¹ In 1962 the ITU representative indicated that “the main task of the Conference will be to consider the allocation of radio frequency bands for operational earth satellite systems, to

¹⁸⁸ Haley, *supra* note 1, at 46; compare, Haley, *supra* note 155, at 14-25; Haley, “Space Exploration—the Problems of Today, Tomorrow and in the Future,” *Second Colloquium* 53-57; Haley, “Report of Working Group VII,” *Fourth Colloquium* 396-405.

¹⁸⁹ U.N. Doc. A/5100; Resolution 1721 D (XVI).

¹⁹⁰ *Ibid.* The 1962 General Assembly Resolution 1802 (XVII), expressed the view that “it is of utmost importance that this Conference make allocations of radio frequency bands sufficient to meet expected outer space needs.” U.N. Doc. A/RES/1802 (XVII). Annex 3, *infra*, p. 446.

¹⁹¹ U.N. Doc. A/C.1/PV.1291, 37.

gether with bands for telemetry command and control facilities necessary for such systems.”¹⁹²

The U.N. has also been kept advised of developments in space communications through the International Council of Scientific Unions’ Committee on Space Research. COSPAR, in conjunction with other of ICSU’s committees, such as the International Scientific Radio Union, the International Astronomical Union, and the International Union for Geology and Geophysics, has displayed much interest in the development of systems of space communications, and has been used to provide technical information to both of the sub-committees of the Committee on the Peaceful Uses of Outer Space. COSPAR has also worked closely with the ITU, and was permitted to send an observer to the 1959 Ordinary Administrative Conference of that body. Subsequently, COSPAR was granted permission to work with the ITU’s International Radio Consultative Committee, particularly in the fields of space systems and ionospheric propagation.¹⁹³ COSPAR’s influence is extensive not only because of its liaison with ITU and the U.N., but primarily because the national scientists included in its membership exchange information on a world-wide basis and are influential in the consultations carried on in every state.

The ITU has received the confidence and respect of its member states.¹⁹⁴ This was also demonstrated in the 1962 Dryden-Blagonravov understandings relating to cooperation in communications experiments by means of a United States Echo type satellite. The agreement took particular note of the role of the ITU and made provision for a program “for the working out with other nations of

¹⁹² U.N. Doc. A/AC.105/PV.14, 27. The ITU submitted a report to the U.N. in 1962 as a result of Resolution 1721 D (XVI). U.N. Doc. E/3645. “The report stresses the fact that telecommunication is not only involved and essential in practically all uses of outer space, but that space systems will provide new telecommunication facilities for terrestrial requirements, new meteorological data to be used in improved weather forecasting and new navigational aid facilities for ships and aircraft.” U.N. Doc. A/5181, 2. Attention was also called to relay satellites, direct broadcasts to earth from satellites, radio astronomy, and allocation of bands for telemetry and the foregoing purposes.

¹⁹³ 2 COSPAR Information Bulletin 4-5 (June 1960). COSPAR also maintains a working group on tracking and telemetry with a subgroup on Radio Tracking and Telemetry.

¹⁹⁴ This is clearly borne out by the discussions conducted in the scientific and technical subcommittee of the Committee on the Peaceful Uses of Outer Space in 1962 and subsequently. U.N. Docs. A/AC.105/C.1/SR.1 and following.

a project for an experimental global system of space communications with due regard to the recommendations of the ITU."¹⁹⁵

There has been recognition on the part of Soviet bloc writers of the need for an orderly legal regime for radio communications in outer space. One writer has called attention to the need to "secure an interference-free operation of radio equipment on spaceships and satellites and to avoid interference with other radio stations on the Earth by stations from space."¹⁹⁶ A leading American observer of Soviet space law attitudes has summarized the Soviet viewpoints:

(1) allocation of radio frequencies is an acute problem of common concern to all nations, particularly to the Soviet Union and the United States; (2) success or failure of scientific space exploration and the application of its results depend critically on a solution of this problem; (3) the Soviet Union has been fully aware of the potential value of space communications and has encouraged its development; (4) the principle of sovereignty is the most important element in Soviet thinking on the legal aspects of space communications; (5) the Soviets assert the right of unrestricted use of radio frequencies so long as no harm to other states can be proven; (6) yet, owing to the complexities of space communications, they presumably hold, at least in the view of Dr. Busak, that multilateral conventions will be needed when the problem becomes acute; and (7) the universally acknowledged complexities of space communications suggest the possibility that future international agreement may be reached if vital Soviet political interests dictate such a course, thereby contributing to an emerging body of international space law.¹⁹⁷

The position of the United States was put forward in 1963, by Deputy Assistant Secretary of State Gardner. He has cited the Communications Satellite Act of 1962 as defining United States objectives in space communications.¹⁹⁸ This statute has demonstrated the interest of the United States in the early operation of a com-

¹⁹⁵ U.N. Doc. A/C.1/880, 5. The agreement also contained the following language: "Telecommunications by means of satellites is expected to lead to a considerable improvement of communications facilities all over the world and can be a most important contribution to the extension of contacts and friendship among nations." *Ibid.*, 3.

¹⁹⁶ Busak, "Radio Communications in Outer Space," *Legal Problems of Space Exploration, A Symposium* 1127.

¹⁹⁷ Kucherov, "Soviet Attitude toward International Law and Outer Space," Chapter VI in *Soviet Space Programs*, *supra* note 82, at 215. The Kucherov reference to Busak is cited in the preceding footnote.

¹⁹⁸ Public Law 87-624, August 31, 1962, 76 Stat. 419.

munications satellite system and recognizes the need to make efficient use of the restricted number of radio frequencies available for space communications.¹⁹⁹ In Gardner's view an express international agreement would best serve the needs of efficient space communications. He stated, "Agreement on the reservation of an adequate part of the frequency spectrum for space communication, and the establishment of ground rules which will assure noninterference of space communications of different countries with each other or with other services on earth, are an obvious prerequisite to progress."²⁰⁰ Unlike Busak, who suggested that such express agreements should be multilateral, it was Gardner's opinion that a functional rather than a doctrinaire approach was required. This could result, in his view, in different kinds of arrangements, which could be either bilateral and regional as well as multilateral.

Implicit in the views of all who have written on the subject of space communications is the belief that no state or other person should engage in harmful interference so long as space vehicles are being used for peaceful, i.e., nonaggressive and beneficial, purposes. The most general demand has been for the express allocation and subsequent international control of radio frequencies. Furthermore, specific demands have been voiced that spacecraft shall not transmit radio messages which may interfere with other telecommunications systems. It has been frequently suggested that transmissions from spacecraft shall be terminated when the mission of the satellite has been completed.²⁰¹ The Committee on Aeronautics of the Association of the Bar of the City of New York has put forward the following principle for radio spectrum management:

The High Contracting Parties agree to take all measures necessary:

(a) within the International Telecommunications Union, to assign and allocate spectrum bands so as to avert undue interference between radio transmissions to or from space and other radio transmissions;

¹⁹⁹ Gardner, "Space Meteorology and Communications: A Challenge to Science and Diplomacy," 48 *Department of State Bulletin* 744 (1963). Compare, Farley, "Foreign Policy Aspects of Communications Satellites," 45 *Department of State Bulletin* 420 (1961). Farley makes reference to the need to conserve the frequency spectrum.

²⁰⁰ Gardner, *op. cit.*, 743.

²⁰¹ *Magna Carta of Space*, Resolution Adopted by the Twelfth Conference of the Inter-American Bar Association 3 (1961); *Davies Draft Code of Rules on the Exploration and Uses of Outer Space* 12.

(b) to assure, by appropriate devices for cut-off, detonation, or other means of termination, that radio transmitters in space craft will not outlive their period of useful activity;

(c) to notify the International Telecommunications Union upon the termination provided in subparagraph (b) above.²⁰²

The need to prevent harmful interference in radio transmissions to and from space vehicles must not only be accepted as a central principle of the law of outer space, but there must also be a sufficiently precise express agreement detailing the rights and duties of those engaging in broadcasting. There is a need for greater legal precision in allocating rights, and for conforming to allocations. The need to clarify procedures whereby a state injured by harmful interference may take appropriate legal action to correct the injurious conditions is also paramount.

The criticality of interference during an operating situation necessitates immediate responses which are likely to remedy the wrongful interference. The seriousness of this situation has been described by Pierce. He said that "if orientation is achieved or influenced by command, there is an added hazard that the system will be activated by a foreign transmitter. If elaborate codes are used to avoid this, there is a great hazard that malfunction will make the equipment unresponsive to legitimate commands. These are not idle worries; space payloads and command systems have been sadly fallible in practice."²⁰³

Glazer has warned if mankind is to enjoy effective communications through the use of space satellites, and if such satellites are to engage in the functions for which they have been designed, that it will be necessary for states to make provision in international communications agreements for rules which are different both in kind and degree from earlier ones. In comparing past efforts with present needs, he has stated that the older "equivocal regulations satisfying all of the nations all of the time may not prove technically reconcilable with the uses of radio for command and orientation of space vehicles, destruction of perilously errant vehicles, and safety of rocket-borne astronauts."²⁰⁴ For all of these reasons a suitable express international agreement is urgently needed. Until such an agreement is negotiated and becomes operational, cooperative measures among states will be required to forestall or minimize violations

²⁰² *Some Tentative Provisions for International Agreements on Space Activities* 11-12 (March 24, 1960).

²⁰³ Pierce, "Hazards of Communications Satellites," in Odishaw, ed., *The Challenges of Space* 65 (1962).

²⁰⁴ Glazer, *supra* note 161 at 310.

of the basic principle prohibiting harmful interference. To the extent that states engage in practices which result in harmful interference to vital space communications, it will be necessary for the injured state to employ all measures of redress permitted by international law. These measures range from mere protest to such reasonable and peaceful measures, involving a minimum of coercion, as may be required to insure compliance with the principle. The joint sanctions of reciprocity and potential retaliation would probably protect the principle except in cases of unlawful aggression.

D. NATIONAL JURISDICTION OVER OUTER SPACE ACTIVITIES

Jurisdiction as used herein means the "capacity of a state under international law to prescribe or to enforce rules of law."²⁰⁵ For these purposes, the position of the United States that international law applies to relations among states in outer space is adopted.²⁰⁶

National jurisdiction relating to space activities may be considered under the traditional categories of territory as a basis for jurisdiction, nationality as a basis for jurisdiction, the protection of other state interests, and the protection of certain universal interests. It will also be necessary to analyze means whereby national jurisdiction may be yielded amounting to the process whereby special exemption from such jurisdiction may be established.

The factual pattern for the following analysis of jurisdiction will be limited to events involving two or more vehicles in outer space and to events on board nationally registered or other legally authorized space vehicles.

National jurisdiction over space vehicles and their activities must be related to the manner in which such vehicles are used and also to the legal base upon which their employment is founded. It is clear that space vehicles have been and will be used for commercial, scientific, and military purposes. Private entities have been engaged in commercial and scientific activities; public entities have used the vehicles for all three purposes. In addition, private persons, states, associations of states, and international organizations are also included as having used or having announced plans for the use of space vehicles.

²⁰⁵ *The Foreign Relations Law of the United States*, The American Law Institute Proposed Official Draft 25 (May 3, 1962). Compare, Johnson, "Bases of International Jurisdiction," *Report of International Law Conference*, David Davies Memorial Institute of International Studies 32-33 (1962). It is generally agreed that international jurisdiction is based on the consent of the parties.

²⁰⁶ U.N. Doc. A/AC.105/PV.20, 18 (9 September 1963).

With the general acceptance that outer space, like the high seas, is a *res communis omnium*, the analogy of the high seas as to jurisdictional rights and duties becomes of considerable significance. Thus, the general approach taken by McDougal, Burke, and Vlasic as to maritime situations has direct applicability to national jurisdictional problems relating to outer space. They have written (the reader may wish to transpose spacecraft for ships and outer space for high seas) :

The implementing, jurisdictional principles by which the general community of states seeks to make effective its overriding policies of shared use have long been built, in response to the omnipresent imperatives of harmonious and economic co-operation, about certain allocations of competence which require high certainty and easy prediction in identification of the national character of ships. For interactions upon the high seas, each state has imposed upon it responsibility under both customary international law and by many explicit agreements for the lawful conduct of ships to which it has ascribed its national character; each state may apply its authority to the ships to which it has ascribed its national character and to events occurring upon such ships; each state may protect the ships to which it has ascribed its national character against interferences and deprivations by others. No state may preclude the ships of other states from access to the high seas or directly apply its authority to the ships of other states, except as may be authorized by international law. Every ship is required to have a national character, and scant protection is afforded ships which have no nationality.²⁰⁷

Each of the foregoing four subjects will be analyzed.

²⁰⁷ "The Maintenance of Public Order at Sea and the Nationality of Ships," 54 A.J.I.L. 25 (1960). The authors also take into account the concept of territorial waters where no space law-sea law analogy exists, despite the need for a doctrine of "space innocent passage" whereby a spacecraft might be permitted to transit through another state's sovereign airspace while departing from or returning to the earth's surface while engaged in peaceful, i.e., non-aggressive and beneficial, purposes. Thus, excluding at this time any analogy between territorial waters and outer space, and considering only the situation where a foreign spacecraft is situated within the territory of another state, the final sentence of McDougal's views have applicability to jurisdiction over spacecraft, namely, "For interactions within their internal waters and territorial sea, coastal states are of course authorized to assert authority over ships of other states for the protection of their exclusive interests, but states which have ascribed their national character to these ships are also conceded a limited concurrent jurisdiction for the protection of their interests." *Ibid.*, 27. Compare McDougal, Lasswell and Vlasic, *supra* note 1, at 646-749.

1. Territory as a Basis for Jurisdiction

As is well known, the territory of a state consists of its land, internal waters, territorial waters, the seabeds underlying such waters, the subsoil below these seabeds, and its superjacent airspace. It is also accepted that there is an approximately fixed, but yet to be determined, point separating the airspace from outer space. In this connection it should also be noted that whereas there is a "right of innocent passage" for surface vessels through the territorial waters of another state, there is no right of innocent passage for aircraft through the airspace above those waters. As to space events taking place in the foregoing areas, and affecting the subjacent state, there can be little doubt that the state exercising sovereignty therein will expect to exercise territorial jurisdiction.

The concept of territory serves as a positive basis whereby international law confers to states the right to exercise jurisdiction. Such jurisdiction may be over criminal matters or over civil matters. The basis of territory, as one among several possibilities, has the merit of affording jurisdiction to a state which is well able to prescribe punishments or award damages as a result of its singular possession of persons and facts. Under this theory of jurisdiction, it is extremely probable that the prescribing state will have available under its control the persons and most or all of the essential evidence required for legal judgment.

However, a state's jurisdiction to prescribe need not be exclusive under the territorial principle. As is well known, when national vessels or aircraft or members of a national force are in a foreign state, the state of which they are nationals may impose certain rules upon them. This is treated in section 32 of the *Restatement of Foreign Relations Law* under the heading "Jurisdiction to Enforce Aboard National Vessel or Aircraft or Against Member of National Force." It provides that "A state has jurisdiction, as to rules within its jurisdiction to prescribe, to enforce them (a) aboard a vessel or aircraft having its nationality while under the control of its commanding officer; and (b) against a member of its military forces."²⁰⁸

Comment on this proposition follows:

The enforcement action which a state has jurisdiction to take under the rule stated in this Section includes enforcement action in the territory of another state. It is immaterial that the person involved is not a national of the state taking the action.

Although a state has enforcement jurisdiction under the rule

²⁰⁸ *Restatement of Foreign Relations Law*, *supra* note 205 at 92-93.

stated in this Section, it may not exercise that jurisdiction in the territory of another state (except in the case of a vessel in innocent passage) without the express or implied consent of the territorial state; to do so would be a violation of the rights of the territorial state under international law.²⁰⁹

Although the Restatement limits the application of the foregoing rules to nonspace entities or personnel, it should, nonetheless, follow that where a public spacecraft, engaged in peaceful activities, comes to rest in a state other than that of nationality, it should be entitled to the same treatment as the recited individuals or entities. In the event that a foreign public space vehicle comes down on the territory of another state as the result of bona fide distress, the case would appear to be even clearer against the exercise of jurisdiction over the internal affairs of the space vehicle by the territorial state.²¹⁰

These, of course, are exceptions or variations on the central rule that a state has jurisdiction to enforce within its territory rules of law which are validly prescribed by it. Thus, where a spacecraft causes damage as a result of its coming into the territory of a foreign state, the latter state could validly adjudicate claims presented by injured persons. The victims might be affected by conflicts of law problems along their way to ultimate recovery, and would perhaps have to consider such matters as the enforceability of foreign judgments, choice of law problems, and characterization problems.²¹¹ The victim's government would also be able to pursue diplomatic remedies or to engage in international litigation.²¹² Additionally, where space-craft personnel, when in the territory of another state, or while outside the territory of that state, violate the criminal laws of that state by breaching its peace and good order, through disturbing public tranquility, they would be subject to the criminal jurisdiction of that state.²¹³ It has previously been suggested that the manner of entry into the territory of another state by astronauts is a factor to be taken into account, and that where such entry is occasioned by distress, the general principles of humanity should guide the conduct of the receiving state.²¹⁴ The general principle of jurisdiction over

²⁰⁹ *Ibid.*, 93.

²¹⁰ *Ibid.*, 173-175. Compare, McDougal, Lasswell and Vlassic, *supra* note 1, at 695-704.

²¹¹ *Financial Protection*, *supra* note 5, at 78-84.

²¹² *Ibid.*, 46, 84-85.

²¹³ *Wildenhus' Case*, 120 U.S. 1 (1887).

²¹⁴ *Supra*, pp. 384-394.

aliens would apply under such circumstances. As stated by Brierly, this means that "no state is legally bound to admit aliens into its territory, but if it does so it must observe a certain standard of decent treatment towards them, and their own state may demand reparation for an injury caused to them by a failure to observe this standard."²¹⁵

2. Nationality as a Basis for Jurisdiction

Nationality may be the basis for exercising jurisdiction over a legal person, including individuals, corporations, and other private legal entities. The *Restatement of the Foreign Relations Law* of the United States, placing reliance on the *Nottebohm Case*,²¹⁶ accepted the view that "nationality is not within the absolute determination of a state" under international law so that "an individual has the nationality of a state that confers it upon him provided there exists a genuine link between the state and the individual."²¹⁷ Allegiance of the individual must be given suitable weight in determining his nationality, and since the practice at the time of this writing has been to place manned spacecraft under the control of military personnel while in flight, there would not seem to be any question as to the nationality of individual astronauts.

The jurisdiction over astronauts, based on the consideration of nationality, could vary depending—at least in the United States—on whether they were military or civilian personnel. One writer has noted that "the general laws of the United States, either civil or criminal, would not automatically apply to space stations created by the United States. Our statutes do not have extraterritorial application, except to the extent Congress has provided and as recognized by international law. Congress may extend the application of its laws to conduct aboard United States space vehicles and space stations as it has to persons aboard its national vessels and aircraft. The provisions of the Uniform Code of Military Justice, however, would continue to apply to personnel of our Armed Forces while

²¹⁵ Brierly, *The Law of Nations* 203 (4th ed. 1949). Brierly, as have many writers on international law, has placed more emphasis on jurisdiction over areas than on activities conducted in such areas. *Ibid.*, 173–228. However, there has been a general consensus that so far as the high seas are concerned, jurisdiction must pay special heed to its uses. This approach is being adopted respecting space activities.

²¹⁶ *The Nottebohm Case*, (1955) *I.C.J. Reports* 4.

²¹⁷ *Restatement*, *supra* note 205 at 80-81. For an opposing view see McDougal, Burke and Vlasic, *supra* note 207, at 25.

aboard spacecraft and space stations, as jurisdiction under the code is personal without regard to physical location.”²¹⁸

Although the *Restatement* does not make reference to the nationality of space vehicles, it does call attention to the provisions of Articles 5, 6, and 7 of the Convention on the High Seas of April 29, 1958. Article 5 provides in part that “Ships have the nationality of the State whose flag they are entitled to fly. There must be a genuine link between the State and the ship * * *” Since for the present there does not appear to be the likelihood of “flags of convenience” for spacecraft, the substantial controversy relating to the meaning of “genuine link” will not affect the nationality of space vehicles.²¹⁹ Such nationality, like that of aircraft, pursuant to Article 17 of the Convention on International Civil Aviation of December 7, 1944, will unquestionably be the product of registration. National laws will make provision that spacecraft have the nationality of the state in which they are registered, and this may subsequently be confirmed in international conventions. A long step has been taken in this direction through the unanimous adoption of General Assembly Resolution 1962 (XVIII) of December 24, 1963, which provided, “7. The State on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and any personnel thereon, while in outer space.” The importance of the “state of registry” approach is seen in the assimilation of registry to ownership and the duty to return objects or component parts “found beyond the limits of the State of registry * * * to that State * * *”²²⁰ subject to the latter state’s furnishing of identifying data upon request prior to return. The nationality principle is also given support in paragraph 5 of the Resolution which takes into account “national activities” in outer space.

It is noteworthy that the *Restatement* does not refer to ships and aircraft as parts of the territory of a state. This indicates the preference for the concept of nationality, even though jurisdiction based on nationality “is similar to the jurisdiction over its territory.”²²¹ The same approach may be taken respecting spacecraft. Evidences of nationality may be established not only by means of national registration, but also by reason of the information furnished to the

²¹⁸ Menter, *Astronautical Law* 36-37 (1959). Compare Haughney, “Criminal Responsibility in Outer Space,” Schwartz, ed., *Proceedings of the Conference on Space Science and Space Law* 146 (1964).

²¹⁹ McDougal, Burke, and Vlasic, *supra* note 207, at 104-114; compare Boczek, *Flags of Convenience: An International Legal Study* (1962).

²²⁰ U.N. Doc. A/RES/1962, Article 7, Annex 4, *infra*, p. 450.

²²¹ Johnson, *supra* note 205, at 38.

United Nations in consequence of Paragraph 1 of General Assembly Resolution 1721 B (XVI) by states launching objects into orbit and beyond. National symbols and identification devices also give proof of nationality, as well as the ready national identification of astronauts aboard.

Although nationality at present has been reposed in a single state for a given spacecraft, it is possible that groups of states may wish to afford joint nationality to a given space vehicle. This could be accomplished via agreement, and it may be anticipated that such an agreement would make due provision for jurisdiction.

3. The Protective Principle

Jurisdiction on the part of a state may also be supported by the so-called protective principle. According to the *Restatement*:

(1) A state has jurisdiction to prescribe rules of law attaching legal consequences to conduct outside its territory that threatens its security as a state, provided the conduct is generally recognized as a crime under the law of states that have reasonably developed legal systems.²²²

This is explained as permitting a state to "prescribe a rule of criminal law applicable to conduct outside its territory that does not have sufficient effect within its territory to bring it within the rule stated in § 18 but that has a potentially adverse effect upon the security of the state."²²³ Under this principle a state might seek to enforce action under its espionage laws. There would appear to be no reason why a state could not inhibit conduct described generally as "espionage" when conducted from outside its territory, including outer space, if serious security considerations existed. This would be based on national policy. If one resource state were to implement such a policy, others would probably pass reciprocal legislation. Such information gathering activities do not, however, violate the principles and rules of international law.²²⁴

The 1935 Harvard Draft also accepted the protective principle where an alien outside the jurisdiction of a state engaged in conduct against the security, territorial integrity and political independence of a state, provided such conduct on the part of the alien was not the exercise of a liberty guaranteed to the alien under the law of the place where the act was performed. Johnson, in commenting on the

²²² *Restatement of Foreign Relations Law*, *supra* note 205, at 94.

²²³ *Ibid.* Section 18 is entitled "Jurisdiction to Prescribe With Respect to Effect Within Territory," and involves application of the territorial principle.

²²⁴ *Supra*, pp. 271-295, 368.

Harvard Draft, has stated that "there were some threats to the state which the territorial theory, even objectively applied, could not cover, and that a jurisdiction must exist under which such threats could be repressed. But how to deal with these threats, without appearing to grant totalitarian regimes carte blanche to apply the protective principle in an arbitrary manner * * *" is a continuing dilemma.²²⁵

4. The Universality Principle

The fourth principle mentioned in the *Restatement* is known as the principle of universality, i.e., "Protection of Certain Universal Interests."²²⁶ Included within this category are piracy, collision and salvage on the high seas, and the conservation of fisheries.

It is well known that piracy is a crime under international law. Although the prospects of space piracy are remote, such pirates in space may well be treated as maritime pirates and for the same reasons. The *Restatement* provides that "a state has jurisdiction to take enforcement action in its territory or on the high seas against the crime of piracy under international law, provided such action is consistent with the Convention on the High Seas of April 29, 1958."²²⁷ This Convention restated the customary law on the subject. The 1935 Harvard Draft accepted the universality principle without qualification.

²²⁵ Johnson, *supra* note 205, at 40. Jessup has stated that the principle is a sound one but that it is capable of leading to "extravagant extensions of state power." *Transnational Law* 50 (1951); compare, Mora, "Criminal Jurisdiction over Foreigners," 1958-1959 *University of Pittsburgh Law Review* 567 (1959) who considers it to be subject to abuse. McDougal, Lasswell and Vlasic note that this principle takes into account both physical location and "impact upon value processes * * *" *Supra* note 1, at 647. They add: "States whose territorial community processes are substantially affected by crimes committed on board foreign ships or aircraft, beyond their boundaries, may be accorded competence under both the highly abstract 'protective' principle and the only slightly more concrete 'impact territoriality' principle. Both technical formulations are but expressions of the fundamental community policy which requires that states should be authorized to assert whatever competence is reasonably necessary for the protection of their exclusive interests in their more important bases of power." *Ibid.*, 700. See, generally, Harvard Research, *Jurisdiction*, Articles 7 and 8, pp. 543-563. Values protected by this principle will include security, territorial integrity, political independence, fiscal and monetary stability, among others. Compare, Haley, *Space Law and Government*, *supra* note 157, at 257-267.

²²⁶ *Restatement of Foreign Relations Law*, *supra* note 205, at 96.

²²⁷ *Ibid.*

On the subject of collision and salvage on the high seas the *Restatement* provides:

A state has jurisdiction to prescribe rules of general maritime law, as understood by the state, to govern the substantive results of civil claims for collision or salvage service on the high seas when those claims are asserted for adjudication or other determination in its territory against persons or vessels located there.²²⁸

Although drafted for a nonspace situation, the foregoing provision takes into account a situation which might befall spacecraft. The prospects of collision, though limited, do exist, although the possibility of salvage of spacecraft in outer space does not appear to be realizable. The exercise of national jurisdiction over such events would serve to protect state interests and can be readily justified. Indeed, it is already assumed that a state will exercise such jurisdiction, and much analysis has been directed toward the achievement of the measure of liability to be applied to such situations.²²⁹

5. Analysis

Before considering the respective qualities of the varying theories of national jurisdiction, it may be well to stress the fact that through international consent it may be possible to establish an international jurisdiction which could be either exclusive of or complementary to national jurisdictions. There have been suggestions on the part of respected observers that an international space authority should be created and then vested with jurisdiction to control the operation of space vehicles and their equipment.²³⁰ Others have suggested that space activities should be removed entirely from national management and placed in the hands of an operating international institution.²³¹ In both instances the international organization, either through establishing the conditions under which national activities

²²⁸ *Ibid.*, 99.

²²⁹ *Supra*, pp. 351-380.

²³⁰ Mankiewicz, *supra* note 12 at 202. Rivoire has suggested that an international space agency be vested with the authority to deal with space vehicles which exceed 300 kilometers in height or when they go into orbit. "The Agency would then be responsible for any damage which might be caused, for example, by a collision in space, by disintegration and damage caused by pieces of the craft falling on earth, etc." Rivoire, "Design for a Space Law," *First Colloquium* 101.

²³¹ Leopold and Seafuri, "Orbital and Super-Orbital Space Flight Trajectories—Jurisdictional Touchstones for a United Nations Space Authority," *Legal Problems of Space Exploration, A Symposium* 533-535. It has frequently been suggested that such a body should be a part of the United Nations.

might be carried on and supervising them, or by actually engaging in all space activities, would exercise exclusive jurisdiction. It has been suggested that through such possible international control, space vehicles would not become devices used to intimidate or subjugate states and peoples.²³²

Jenks has compared the desirability of vesting jurisdiction over all space activities in an international organization with the typical cooperative procedures which have developed for shipping and aircraft. He has favored the first approach, and stated that "great advantages in vesting the necessary authority in an international body [exist] if this should be politically practicable, but the difficulties of so doing may well be formidable, particularly in view of the close relationship between the exploration and exploitation of space and questions of defense."²³³ His final judgment was: "Failing such an international solution of the problem of jurisdiction in space beyond the atmosphere, it will be necessary to determine such jurisdiction on the basis of appropriate criteria inspired by analogies drawn from maritime and aviation law and to develop common international rules and standards governing the wide range of problems which would exist."²³⁴ With the advent of the latter situation, despite the substantial capabilities of, and contributions by, the United Nations, the alternatives presented through the different theories of national jurisdiction have become very important.

It should be noted that the four theories of national jurisdiction relating to the peaceful, i.e., nonaggressive and beneficial, uses of outer space are complementary rather than exclusive. At the time of this writing, it is becoming increasingly clear that the protective principle, despite the possibility of its abuse, and the nationality principle are being accorded a preferred status. This has resulted from the focus of attention on activities carried on in outer space and the causal relationship between such activities and the general welfare of mankind divided into nation-states.²³⁵ While the principle has been established at the United Nations that outer space is free for use solely for peaceful purposes, in the age of the atom it is not

²³² Jessup and Taubenfeld, *Controls for Outer Space and the Antarctic Analogy* 265-282 (1959).

²³³ Jenks, *supra* note 88, at 39.

²³⁴ *Ibid.*, 44.

²³⁵ McDougal and Lipson, *supra* note 187, at 407; Feldman, "An American View of Jurisdiction in Outer Space," *First Colloquium* 47; *Legal Problems of Space Exploration, A Symposium* 456. The latter has noted that the "right of a State to regulate and control conduct occurring entirely outside its territory which may have direct effects within its territory [must rely on a] jurisdiction [which] is not territorial or spatial but causal." *Ibid.*

possible for states to accept a theory of jurisdiction which does not take into account the defensive needs of the state. It has been stated that "the rationale of the protective principle of jurisdiction is * * * the principle of self-defense."²³⁶ The nationality principle may be derived from the sovereignty which a state exercises over its nationals and over its property. For this reason there has never been any doubt as to the applicability of that principle to the conduct of nationals and national spacecraft in outer space, thereby permitting the exercise of jurisdiction on such facts. The real problem for a theory of space jurisdiction has been to provide a basis for the exercise of jurisdiction over nonnationals and nonnational spacecraft in an area beyond the sovereignty of a state. The protective principle of jurisdiction serves this purpose.²³⁷ Of course, it hardly need be noted that a theory of jurisdiction based on protection and self-defense is a far cry from the exercise of sovereignty in outer space.

The fact that there *are* four principal theories relating to national jurisdiction over criminal or tortious conduct suggests the presence of inadequacies or defects in *all* of them. The United States, it has been said, has employed the territorial principle to cope with the problem of jurisdiction over crimes.²³⁸ Judge Carter in commenting on this has indicated that "as a statement of the entire international law of jurisdiction it is inadequate."²³⁹ Nonetheless, international law does provide guidance as to which nation or nations may take jurisdiction, for it permits "any nation which has a reasonable relationship with the persons involved, or with the occurrence itself, to take jurisdiction and to adjudicate the matter."²⁴⁰ Whether the final decision is based on the four preceding principles (some writers stress only three, namely, nationality, territoriality, or protective)²⁴¹ the concept of jurisdiction exists to support the need for legal order and stability in outer space and in space related activities, just as there is a need for such order and stability in the airspace, on the high seas, and on the land surfaces of the earth.

²³⁶ Johnson, *supra* note 205, at 41.

²³⁷ For a description of how such a process evolves, and a statement of the values involved, see McDougal and Lipson, *supra* note 187, at 419-422.

²³⁸ Preuss, "American Conception of Jurisdiction with Respect to Conflicts of Laws on Crime," 30 *Transactions of the Grotius Society* 184 (1944).

²³⁹ *U.S. vs. Rodriguez*, 182 F Supp 479, 488 (So. Dist. Calif. 1960).

²⁴⁰ Ward, "Projecting the Law of the Sea into the Law of Space," 1957 *The JAG Journal* 6 (March 1957).

²⁴¹ Sarkar, "The Proper Law of Crime in International Law," 11 *International and Comparative Law Quarterly* 446 (1962); McDougal and Lipson, *supra* note 187, at 428. Others have developed different categories. See McDougal, Lasswell and Vlasic, *supra* note 1, at 647-700.

Various standards have been suggested with respect to the selection of one principle of jurisdiction as opposed to another in any given situation. Some writers have called attention to guidance through the concept of the "proper law" which emphasizes that jurisdiction be exercised by that entity having the closest and most real connection with, and interest in, the problem.²⁴² Reese, for example, has set up certain factors to be considered in making a choice of law, and these have application to the problem of jurisdiction over outer space activities. He has suggested the need to take into account certainty, predictability, and ease of application in making a selection of rules. He has also noted the need to take into account such conflicting considerations as the duty to make fine distinctions, to be flexible, and to permit change to take place so that justice may be accomplished.²⁴³

The answer to such a problem as here presented must be a practical one, but this is affected by the political considerations which so measurably influence the growth of the law of outer space. At the United Nations there has been some attention given to the matter of nationality of spacecraft, but little comment has taken place as to the application of competing principles of national jurisdiction. Further, the matter of nationality has generally been connected with the factors of ownership and registry. Thus, the United States Draft Declaration of Principles Relating to the Exploration and Use of Outer Space contains the following:

7. Jurisdiction over a space vehicle while it is in outer space shall be retained by the State or international organization which had jurisdiction at the time of launching. Ownership and property rights in a space vehicle and its components remain unaffected in outer space or upon return to earth.²⁴⁴

²⁴² Sarkar, *op. cit.* 467-468; compare Morris, "The Proper Law of Tort," 64 *Harvard Law Review* 881 (1951), and see Jenks, *supra* note 88, at 41.

²⁴³ Reese, "The Ever Changing Rules of Choice of Law," 9 *Netherlands International Law Review* 389 (1962). As to the "proper law" theory he has noted that "this proposed rule would not, of course, be as easy to apply as that of the place of injury and it would not afford the same predictability of result." *Ibid.*, 391. The prospect of conducting space activities by nationals of several states raises the question of choice-of-law problems for international contracts. See Reese, "Power of Parties to Choose Law Governing Their Contracts," Nurick "Choice-of-Law Clauses and International Contracts," Amram, "Uniform Legislation as an Effective Alternative to the Treaty Technique," all in 54 *Proceedings of the American Society of International Law* 49-70 (1960).

²⁴⁴ U.N. Doc. A/C.1/881. Annex 10, *infra*, p. 459.

Additionally, the Soviet Draft Declaration of the Basic Principles Governing the Activities of States in the Exploration and Use of Outer Space makes reference to sovereign rights on the part of states over objects launched. Article 8 provides:

8. States shall retain their sovereign rights over objects they launch into outer space. Rights of ownership in respect of objects launched into outer space and their components remain unaffected while they are in outer space and upon their return to the earth.²⁴⁵

The emphasis on the need for nationality of spacecraft and component parts is general.²⁴⁶ The same holds true for the astronaut.²⁴⁷ Both factors may result in jurisdiction based on nationality, but as heretofore suggested, jurisdiction may be based on each of the other theories with equal plausibility under pertinent fact conditions. Of the theories mentioned, it has been suggested that the principle of universality is the broadest, least precise, and rests on a more complex foundation. Johnson has noted that its foundation may consist in four separate, but related, elements, namely: "(i) the sovereignty of each state, (ii) its right to defend itself, and its collective right to defend its fellow members of the international community, (iii) its responsibility to the other members of the international community in such matters as piracy and war crimes and finally (iv) the consent of the other members of the international community."²⁴⁸

Any consideration of national jurisdiction must not lose sight of the fact that these theories or doctrines must satisfy not only the needs of states, as such, but also the world community, and that in the course of serving practical needs they will contribute measurably to the reduction of tensions among states. It should be noted that these jurisdictional concepts have been applied by states only with difficulty to activities taking place on the high seas or in the air-space. Many difficulties can be imagined in the application of one or

²⁴⁵ U.N. Doc. A/AC.105/C.2/L.6. Annex 16, *infra*, p. 466.

²⁴⁶ See the "Working Paper Submitted by the Belgian Delegation on the Unification of Certain Rules Governing Liability for Damage Caused by Space Vehicles," U.N. Doc. A/AC.105/C.2/L.7, and an explanation by the Belgian delegate to the legal subcommittee of the Committee on Peaceful Uses of Outer Space, U.N. Doc. A/AC.105/C.2/SR.25, 6-8. He stated that the "national law of the injured person should determine the nature of the damage conferring entitlement to compensation and the extent of liability * * *" *Ibid.*, 7. See *Davies Draft Code of Rules on the Exploration and Uses of Outer Space* 15. Machowski, *supra* note 80, at 1208-1212.

²⁴⁷ Cocca, *supra* note 115, at 147-148.

²⁴⁸ Johnson, *supra* note 205, at 41.

all to events which take place, or will, in outer space, but that have effects which are not limited to that dimension. In view of this situation, McDougal and Lipson have suggested the possibility of a compromise through the establishment of a rule allocating jurisdiction over space activities to the state of last departure or first landing.²⁴⁹ This solution, which might be the product either of customary international law or of express international agreement, like the others, would permit "any state substantially affected to assert its competence, when it has effective control over persons and assets * * *." Taken together, these approaches might provide "sufficient alternatives in choice to encourage flexible accommodation in reciprocal demand and mutual tolerance."²⁵⁰ Without the presence of this last quality none of the theories will be of much use.

At the present time much additional thought will have to be given by states to the problems of jurisdiction over space objects. Resolution 1962 (XVIII) of December 24, 1963, was notable in what it failed to say, although it did produce modest clarification in providing "7. The State on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and any personnel thereon, *while in outer space.*"²⁵¹ Additional declarations setting forth an international consensus as to jurisdictional rules affecting spacecraft in the atmosphere or land or water areas of the nonowning state are sorely needed. Until such a consensus can be expressly stated, existing understandings as to rights based on registry or ownership may have little if any impact on the jurisdictional rights of the receiving state for objects coming within its sovereign boundaries. Under such circumstances the receiving state may be held to be free to determine which theories it is willing to apply in the exercise of its national jurisdiction.

Finally, the subject of national jurisdiction requires brief reference to the matter of immunities and waiver. With regard to outer space activities having a jurisdictional impact on the affairs of a state, it is possible for claims to be made relating to the immunity of state owned property, the rights of public representatives of foreign states, and the immunity of international organizations and their personnel. Other situations in which such claims may be asserted may be predicted when space activities take on a heightened tempo. The various considerations which have proven acceptable with re-

²⁴⁹ McDougal and Lipson, *supra* note 187, at 407.

²⁵⁰ *Ibid.*

²⁵¹ U.N. Doc. A/RES/1962 (XVIII). Annex 4, *infra*, p. 450. (Italics added.)

spect to nonspace assertions of immunity will unquestionably be pertinent to the subject of immunities;²⁵² the same would undoubtedly prevail for matters of waiver. Both the subject of national jurisdiction and the subject of international jurisdiction are pressing ones and could readily be treated in appropriate express agreements between states and other public entities.

²⁵² Bishop, *International Law* 550-619 (2nd ed., 1962); Fenwick, *International Law* 307-309 (3d ed., 1948).

CHAPTER VII

CONCLUSIONS

The emergence of the international law of outer space brought with it a flurry of doctrinal excitement. Now, however, despite the novelty of law and legal institutions for outer space, it is rapidly becoming evident that space relationships are subject to the traditional principles, standards, and rules generally available to international law.

For the moment, the physical conquest of outer space has outstripped man's views of his relations with others in and affecting space. It is as if the human race, for an eon of time, instead of inhabiting the surface of the earth, had lain like the fish at the bottom of a vast sea. But now, owing to the changes produced by tempestuous science and technology, man has moved into an area even beyond the atmosphere. He has extended his reach into the uncharted limits of a space ocean containing celestial bodies in the form of planetary islands. The resulting complexities rival such concepts as the light-year, with its problems of figuration, comparison, and human appreciation. One is struck by the awesomeness of these heterogeneous factors, which, while apparently verifiable, nonetheless do not seem quite real.

The seemingly unfathomable facts of the reality of space have in no wise inhibited the emergence of an international law of outer space. It is a fact that the international law of outer space began to develop from the very moment the first artificial satellite was placed in orbit. Between that date and this, man has not been at a loss to explain his relationship to outer space and his interrelationships with men of other nationalities, states, and international organizations. The flood of literature has pointed to substantial configurations of consensus—a commonality of legal viewpoint which appears to be as amazing as it was unanticipated.

Yet, one should not forget the all-abiding permanence of change. Mankind is still in the "Model T" phase of his use and exploitation of outer space. With the ever-changing and ever-enlarging spiral of scientific and technological achievement, it may well be that when one looks back from the vantage point of the future, the present state of the law will be seen as singularly provisional.

For example, the space vehicles of today's world have limitations resulting from their common characteristics. Their maneuverability is restricted because of the desirability to lock them onto a pathway employing the kinetic energy of their own motion. One result is that they are presently unable to avoid overflying national boundaries. However, it is entirely within the range of probability that within the proximate future, space vehicles will be given much greater maneuverability in order to complete rendezvous missions, engage in station keeping, and participate in the transfer of men and materials in outer space and on celestial bodies. Even then it is unlikely that they will be able to avoid transiting in close proximity above scores of subjacent states. From all indications it appears to be exceedingly probable that space vehicles will soon be capable of moving for thousands of miles at an altitude of approximately fifty statute miles above the surface of the earth.

However, one should not suggest that the substance of international space law is influenced only by scientific and technological considerations. Important as the creative tempo of the times may be, outer space is essentially a man-oriented area. Consequently, all of the elements of the social complex (which are, by definition, man-oriented) will have their impact upon the law of outer space—just as they have had and will continue to have their undeniable influence upon all relational situations.

The methodology of the international law of outer space has not substantially departed from traditional guidelines. Such basic sources as general customary international law, treaties, and general principles of law have been relied upon in the development of space law. Also, of very substantial importance have been the unanimously adopted Resolutions, sometimes in the form of a Declaration, of the General Assembly of the United Nations. They constitute a "soft law," in contrast to the "hard law" of duly ratified and promulgated international conventions. Resource states, as well as other major states, have acknowledged that the terms of such United Nations Resolutions must be "respected" and this view has been generally upheld by all states. Further, and of considerable importance, it is now quite possible to maintain that much of the contents of such Resolutions are no longer to be considered as creative of international space law principles, but instead merely declaratory of operative principles based upon existing custom. One difficulty in this connection, but not an insuperable one, is that customary international law is most readily evidenced by the presence of a claim of right to perform an affirmative act. The existence of such affirmative acts is readily measured by empirical processes. It is more

difficult to determine the presence of customary rights where the conduct to be measured is negative in context, that is, where no positive and affirmatively ongoing action is observable. Customary international law has generally sanctioned affirmative conduct, but has had a limited utility as a source of law where there has been a lack of observable conduct. In such a situation, one can debate whether the international practice of inaction has resulted in a customary rule of law prohibiting the institution of the refrained action. There does not appear to be any substantial reason why the practice of inaction or nonaction in the case of wilfully refraining from placing weapons of mass-destruction capability into outer space should not be regarded as subject to the processes of customary law. Obviously, express, and therefore more tangible, forms of law are to be preferred, such as U.N. Resolutions or Declarations and written international agreements.

International law, and with it the international law of outer space, employs creative processes somewhat different from those observed in municipal systems. The principal difference is that a nation-state possesses centralized control over the law-creating processes as reflected in its legislative, executive, judicial, and administrative institutions. Principles, standards, and rules of municipal law are, however, in the main, little different from those characteristic of international law.

Any legal principle is a starting point for legal reasoning; it is properly broad and understandably vague. Any legal rule delineates specific consequences which will follow either a breach of the rule or compliance with it. In its most typical situation, a rule—as in a criminal law context—provides that if one murders another, specific sanctions will result. Any standard, on the other hand, is the occupant of a middle ground—neither overly broad nor vague; neither severely precise nor widely ranging.

The international law of outer space already consists of a number of substantial and valid principles. It is in search of rules, which it will surely receive, especially through the process of express international agreements. It is also endeavoring to prove its entitlement to its own international legal standards. In these areas, it has been able to borrow substantially from the corpus of existing international law.

International legal principles, like other legal principles when seen from the point of view of their creative qualities and forward-looking responsibilities, need not draw unnecessarily fine distinction between political and legal content. Indeed, the singular quality of undifferentiated vagueness of outline and blurring of characteristics

is absolutely essential to the utility of this concept. Thus, in the forum of principles, policy makers may rely upon what in their considered judgment is regarded as a good, or reasonable, or acceptable outcome. They may, as in fact they do, embark upon the process of decision through deduction. This process is of substantial, although not of exclusive, significance in an area as new as that of outer space activities. It is of importance because the demands for law are somewhat broader than man's actual experiences with the situations which he wishes to render subject to legal control.

The other side of the coin is the inductive process. Here man is able to gather together many instances of good, reasonable, or acceptable conduct and to draw broad generalizations from a myriad of individual experiences. In practice, this process is more readily available to municipal law, through reference to the specific decisions of municipal courts, than to international law with its relatively infrequent use of the judicial process. International law has been able to compensate through the development of its own key processes.

Reference by the decision maker to both the deductive and inductive processes is valid, and neither has preemptive appeal to the exclusion of the other. However, with the development of operational space situations, an apparent need for adequate legal guidance has arisen. This has resulted in close attention to clearly observable customary practices and to contributions of the United Nations. In each there have been joined national and international claims to engage in unrestricted space transit, provided the activities and the uses of space vehicles were for peaceful purposes.

One of the themes of this treatise has been that a customary international law of outer space has been developing concurrently with the expression of principles by the United Nations. However, until this point is carefully weighed and fully accepted by informed international lawyers—and the procedures for working customary international law into the fabric of that law are often slow and laborious—it may be easier, but by no means more correct, to rely upon the authority of principles and deductive processes.

Resolutions 1721 (XVI) and 1962 (XVIII) of the General Assembly of the United Nations were adopted unanimously in 1961 and 1963. They proclaimed that certain general principles apply to outer space and to celestial bodies. Resolution 1721, recognizing the common interest of mankind in furthering the peaceful uses of outer space and believing that the exploration and use of outer space should be only for the betterment of mankind and to the benefit of

states, irrespective of the stage of their economic and scientific development, commended the following principles to states:

- (1) international law is applicable to outer space and celestial bodies;
- (2) the Charter of the United Nations is applicable to outer space and celestial bodies;
- (3) such areas are free for exploration and use by all states in conformity with international law; and
- (4) such areas are not subject to national appropriation.

Resolution 1962 also recognized the common interest of mankind in the exploration and use of outer space for peaceful purposes. This Resolution restated, with somewhat more particularity, the foregoing principles. In assessing the significance of these unanimously adopted principles, it should be borne in mind that they were the product of difficult and discerning international negotiations extending over a five-year period. Their legislative history does not permit them to be disregarded.

Resolution 1962 also contains additional principles for outer space. These principles, which relate to subjects which more readily partake of the quality of legal rules, will unquestionably assume, before too long, the legal form of express international agreements and conventions. Included in this category of legal subjects were the provisions that:

- (1) states bear international responsibility for national activities in outer space;
- (2) such activities may be conducted by international organizations and by nongovernmental entities;
- (3) the peaceful exploration and use of outer space by a state shall be guided by the principles of cooperation and mutual assistance so that due regard will be taken for the corresponding interests of other states, particularly when related to space activities or experiments which would cause potentially harmful interference with the peaceful exploration and use of outer space by other states;
- (4) the state on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object and personnel thereon while in outer space, and when such object is found in another state, it is to be returned upon the submission of identifying data by the launching state;
- (5) international liability exists on the part of each state which launches or procures the launching of an object into outer

space, and on the part of each state from whose territory or facility an object is launched, under certain conditions when harm results; and

(6) states have a duty to render assistance to astronauts in the event of accident, distress, or emergency landing, with the provision that such persons shall be safely and promptly returned to the state of registry of the space vehicle.

Moving from these fundamental principles to legal standards, it must be noted that this concept envisages the application of practical experience and suitable logic to the principles and rules of the law. By reference to legal standards, the international law of outer space takes into account a process for assuring the security needs of nations and of the international community. Further, reference to standards makes possible the development of a regime in outer space in which there may be a systematic and, at least, a minimal amount of public order.

The means to effect national security in this environment will naturally involve several operational procedures and policy determinations. Defensive techniques, employed in the following sequence and in the appropriate context, being not prohibited by the international law of outer space are, consequently, permitted: the employment of an early warning system, including the process of detection, tracking, monitoring, and inspection. Additionally, there may be employed detailed classification procedures leading ultimately perhaps to interception, neutralization, interdiction, or destruction of specifically undesirable and objectionable space objects.

It is the function of the legal standard to assist in determining what constitutes the specifically undesirable and objectionable vehicle or event. This in turn requires a timely factual determination of the existence of a real or significant threat to a nation's security. Such a threat may also be directed toward international peace and security. In measuring the nature of such threats, through the application of human judgment to any actual or anticipated situation, the decision maker is obliged to take into account the express or verbally communicated position of the actual or probable adversary. The decision maker is also obliged to consider the implicit or contextual facts which are equally subject to empirical observation and rational analysis. In such a process, all reasonable implications, both express and inferred, must be taken into account.

Finally, there is now, and it may be predicted that there will continue to be, a legal order for outer space and celestial bodies. This treatise has demonstrated that there is a firm expectation on the

part of mankind, as reflected in valid decisions reached in impressive national and international forums, that present and future space relations must give due consideration to the fundamental needs of the members of the community of nations. Decision makers in this emerging area of international law, as in other areas of international law, need to be guided by two major considerations: (1) They must build into the corpus of such law the readily perceived advantages of mutual benefit flowing from common compliance, and (2) They must also be equally aware of the detriments flowing from noncompliance with reasonably held expectations. Through understanding these fundamental concepts, and by conforming to them, there can be an acceptable international legal order for outer space.

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15	Union of Soviet Socialist Republics: Draft International Agreement on the Rescue of Astronauts and Spaceships Making Emergency Landings. <i>U.N. Doc. A/AC.105/L.3; U.N. Doc. A/5181</i> . September 10, 1962	464
16	Union of Soviet Socialist Republics: Draft Declaration of the Basic Principles Governing the Activities of States in the Exploration and Use of Outer Space. <i>U.N. Doc. A/AC.105/C.2/L.6</i> . April 16, 1963	466
17	Belgium: Working Paper Submitted by the Belgian Delegation on the Unification of Certain Rules Governing Liability for Damage Caused by Space Vehicles. <i>U.N. Doc. A/AC.105/C.2/L.7, U.N. Doc. A/AC.105/12. Annex I</i> . April 30, 1963	468
18	United Kingdom of Great Britain and Northern Ireland: Draft Declaration of Basic Principles Governing the Activities of States Pertaining to the Exploration and Use of Outer Space. <i>U.N. Doc. A/C.1/879</i> . December 4, 1962	469
19	Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space and Under Water, August 5, 1963. <i>Department of State Bulletin</i> , August 12, 1963, p. 239	470
20	United Nations <i>Ad Hoc</i> Committee on the Peaceful Uses of Outer Space, Report to the United Nations General Assembly, Fourteenth Session, New York, 1959. <i>U.N. Doc. A/4141</i> . July 14, 1959. Extracts	472

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21 Union of Soviet Socialist Republics: Draft Declaration of the Basic Principles Governing the Activities of States Pertaining to the Exploration and Use of Outer Space. <i>U.N. Doc. A/AC.105/L.2, U.N. Doc. A/5181, Annex III.</i> September 10, 1962-----	480
22 Summary of Understanding between A. A. Blagonravov and Hugh L. Dryden, Geneva, Switzerland. <i>U.N. Doc. A/C.1/880.</i> June 8, 1962-----	482

ANNEX 1

United Nations General Assembly Resolution 1472 (XIV). International co-operation in the peaceful uses of outer space. December 12, 1959.

A

The General Assembly,

Recognizing the common interest of mankind as a whole in furthering the peaceful use of outer space,

Believing that the exploration and use of outer space should be only for the betterment of mankind and to the benefit of States irrespective of the stage of their economic or scientific development,

Desiring to avoid the extension of present national rivalries into this new field,

Recognizing the great importance of international co-operation in the exploration and exploitation of outer space for peaceful purposes,

Noting the continuing programmes of scientific co-operation in the exploration of outer space being undertaken by the international scientific community,

Believing also that the United Nations should promote international co-operation in the peaceful uses of outer space,

1. *Establishes a Committee on the Peaceful Uses of Outer Space, consisting of Albania, Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Czechoslovakia, France, Hungary, India, Iran, Italy, Japan, Lebanon, Mexico, Poland, Romania, Sweden, the Union of Soviet Socialist Republics, the United Arab Republic, the United Kingdom of Great Britain and Northern Ireland and the United States of America, whose members will serve for the years 1960 and 1961, and requests the Committee:*

(a) *To review, as appropriate, the area of international co-operation, and to study practical and feasible means for giving effect to programmes in the peaceful uses of outer space which could*

appropriately be undertaken under United Nations auspices, including, *inter alia*:

- (i) Assistance for the continuation on a permanent basis of the research on outer space carried on within the framework of the International Geophysical Year;
 - (ii) Organization of the mutual exchange and dissemination of information on outer space research;
 - (iii) Encouragement of national research programmes for the study of outer space, and the rendering of all possible assistance and help towards their realization;
 - (b) To study the nature of legal problems which may arise from the exploration of outer space;
2. *Requests* the Committee to submit reports on its activities to the subsequent sessions of the General Assembly.

*856th plenary meeting,
12 December 1959.*

B

The General Assembly,

Noting with satisfaction the successes of great significance to mankind that have been attained in the exploration of outer space in the form of the recent launching of artificial earth satellites and space rockets,

Attaching great importance to a broad development of international co-operation in the peaceful uses of outer space in the interests of the development of science and the improvement of the well-being of peoples,

1. *Decides* to convene in 1960 or 1961, under the auspices of the United Nations, an international scientific conference of interested Members of the United Nations and members of the specialized agencies for the exchange of experience in the peaceful uses of outer space;

2. *Requests* the Committee on the Peaceful Uses of Outer Space, established in resolution A above, in consultation with the Secretary-General and in co-operation with the appropriate specialized agencies, to work out proposals with regard to the convening of such a conference.

3. *Requests* the Secretary-General, in accordance with the conclusions of the Committee, to make the necessary organizational arrangements for holding the conference.

*856th plenary meeting,
12 December 1959.*

ANNEX 2

United Nations General Assembly Resolution 1721 (XVI). International co-operation in the peaceful uses of outer space. December 20, 1961.

A

The General Assembly,

Recognizing the common interest of mankind in furthering the peaceful uses of outer space and the urgent need to strengthen international co-operation in this important field,

Believing that the exploration and use of outer space should be only for the betterment of mankind and to the benefit of States irrespective of the stage of their economic or scientific development,

1. *Commends to States for their guidance in the exploration and use of outer space the following principles:*

(a) *International law, including the Charter of the United Nations, applies to outer space and celestial bodies;*

(b) *Outer space and celestial bodies are free for exploration and use by all States in conformity with international law and are not subject to national appropriation;*

2. *Invites the Committee on the Peaceful uses of Outer Space to study and report on the legal problems which may arise from the exploration and use of outer space.*

*1085th plenary meeting,
20 December 1961.*

B

The General Assembly,

Believing that the United Nations should provide a focal point for international co-operation in the peaceful exploration and use of outer space,

1. *Calls upon States launching objects into orbit or beyond to furnish information promptly to the Committee on the Peaceful Uses of Outer Space, through the Secretary-General, for the registration of launchings;*

2. *Requests the Secretary-General to maintain a public registry of the information furnished in accordance with paragraph 1 above;*

3. *Requests the Committee on the Peaceful Uses of Outer Space, in co-operation with the Secretary-General and making full use of the functions and resources of the Secretariat:*

(a) *To maintain close contact with governmental and non-governmental organizations concerned with outer space matters;*

(b) *To provide for the exchange of such information relating to outer space activities as Governments may supply on a voluntary*

basis, supplementing but not duplicating existing technical and scientific exchanges;

(c) To assist in the study of measures for the promotion of international co-operation in outer space activities;

4. *Further requests* the Committee on the Peaceful Uses of Outer Space to report to the General Assembly on the arrangements undertaken for the performance of those functions and on such developments relating to the peaceful uses of outer space as it considers significant.

*1085th plenary meeting,
20 December 1961.*

C

The General Assembly,

Noting with gratification the marked progress for meteorological science and technology opened up by the advances in outer space,

Convinced of the world-wide benefits to be derived from international co-operation in weather research and analysis,

1. *Recommends* to all Member States and to the World Meteorological Organization and other appropriate specialized agencies the early and comprehensive study, in the light of developments in outer space, of measures:

(a) To advance the state of atmospheric science and technology so as to provide greater knowledge of basic physical forces affecting climate and the possibility of large-scale weather modification;

(b) To develop existing weather forecasting capabilities and to help Member States make effective use of such capabilities through regional meteorological centres;

2. *Requests* the World Meteorological Organization, consulting as appropriate with the United Nations Educational, Scientific and Cultural Organization and other specialized agencies and governmental and nongovernmental organizations, such as the International Council of Scientific Unions, to submit a report to the Governments of its Member States and to the Economic and Social Council at its thirty-fourth session regarding appropriate organizational and financial arrangements to achieve those ends, with a view to their further consideration by the General Assembly at its seventeenth session;

3. *Requests* the Committee on the Peaceful uses of Outer Space, as it deems appropriate, to review that report and submit its comments and recommendations to the Economic and Social Council and to the General Assembly.

*1085th plenary meeting,
20 December 1961.*

D

The General Assembly,

Believing that communication by means of satellites should be available to the nations of the world as soon as practicable on a global and non-discriminatory basis,

Convinced of the need to prepare the way for the establishment of effective operational satellite communication,

1. *Notes with satisfaction that the International Telecommunication Union plans to call a special conference in 1963 to make allocations of radio frequency bands for outer space activities;*

2. *Recommends that the International Telecommunication Union consider at that conference those aspects of space communication in which international co-operation will be required;*

3. *Notes the potential importance of communication satellites for use by the United Nations and its principal organs and specialized agencies for both operational and informational requirements;*

4. *Invites the Special Fund and the Expanded Programme of Technical Assistance, in consultation with the International Telecommunication Union, to give sympathetic consideration to requests from Member States for technical and other assistance for the survey of their communication needs and for the development of their domestic communication facilities so that they may make effective use of space communication;*

5. *Requests the International Telecommunication Union, consulting as appropriate with Member States, the United Nations Educational, Scientific and Cultural Organization and other specialized agencies and governmental and non-governmental organizations, such as the Committee on Space Research of the International Council of Scientific Unions, to submit a report on the implementation of these proposals to the Economic and Social Council at its thirty-fourth session and to the General Assembly at its seventeenth session;*

6. *Requests the Committee on the Peaceful Uses of Outer Space, as it deems appropriate, to review that report and submit its comments and recommendations to the Economic and Social Council and to the General Assembly.*

*1085th plenary meeting,
20 December 1961.*

E

The General Assembly,

Recalling its resolution 1472 (XIV) of 12 December 1959,

Noting that the terms of office of the members of the Committee on the Peaceful Uses of Outer Space expire at the end of 1961,

Noting the report of the Committee on the Peaceful Uses of Outer Space,¹

1. *Decides to continue the membership of the Committee on the Peaceful Uses of Outer Space as set forth in General Assembly resolution 1472 (XIV) and to add Chad, Mongolia, Morocco and Sierra Leone to its membership in recognition of the increased membership of the United Nations since the Committee was established;*
2. *Requests the Committee on the Peaceful Uses of Outer Space to meet not later than 31 March 1962 to carry out its mandate as contained in General Assembly resolution 1472(XIV), to review the activities provided for in resolutions A, B, C and D above and to make such reports as it may consider appropriate.*

*1085th plenary meeting,
20 December 1961.*

ANNEX 3

United Nations General Assembly Resolution 1802 (XVII). International co-operation in the peaceful uses of outer space. December 14, 1962.

The General Assembly,

Recalling its resolution 1721 (XVI) of 20 December 1961 on international co-operation in the peaceful uses of outer space,

Believing that the activities of States in the exploration and use of outer space should be carried out in conformity with international law including the Charter of the United Nations, in the interest of friendly relations among nations,

Stressing the necessity of the progressive development of international law pertaining to the further elaboration of basic legal principles governing the activities of States in the exploration and use of outer space, to liability for space vehicle accidents and to assistance to, and return of, astronauts and space vehicles, as well as to other legal problems,

Bearing in mind that the application of scientific and technological advances in outer space, particularly in the fields of meteorology and communications, can bring great advantages to mankind and contribute to the economic and social progress of the developing countries as envisaged in the United Nations Development Decade programme,

¹ *Official Records of the General Assembly, Sixteenth Session, Annexes,* agenda item 21, document A/4987.

Having considered the report submitted by the Committee on the Peaceful Uses of Outer Space in response to resolution 1721 (XVI),¹

I

1. *Notes with regret* that the Committee on the Peaceful Uses of Outer Space has not yet made recommendations on legal questions connected with the peaceful uses of outer space;
2. *Calls upon* all Member States to co-operate in the further development of law for outer space;
3. *Requests* the Committee on the Peaceful Uses of Outer Space to continue urgently its work on the further elaboration of basic legal principles governing the activities of States in the exploration and use of outer space, on liability for space vehicle accidents and on assistance to, and return of, astronauts and space vehicles, as well as on other legal problems;
4. *Refers* to the Committee on the Peaceful Uses of Outer Space, as a basis for this work, all proposals which have been made thus far, including the draft declaration of the basic principles governing the activities of States pertaining to the exploration and use of outer space submitted by the Union of Soviet Socialist Republics,² the draft international agreement on the rescue of astronauts and spaceships making emergency landings submitted by the Union of Soviet Socialist Republics,³ the draft proposal on assistance to, and return of, space vehicles and personnel submitted by the United States of America,⁴ the draft proposal on liability for space vehicle accidents submitted by the United States of America,⁵ the draft code for international co-operation in the peaceful uses of outer space submitted by the United Arab Republic,⁶ the draft declaration of basic principles governing the activities of States pertaining to the exploration and use of outer space submitted by the United Kingdom of Great Britain and Northern Ireland,⁷ the draft declaration of principles relating to the exploration and use of outer space submitted by the United States of America,⁸ and all other proposals and documents presented to the General Assembly during its debates on this item and the records of those debates;

¹ A/5181.

² *Ibid.*, annex III, A.

³ *Ibid.*, annex III, B.

⁴ *Ibid.*, annex III, C.

⁵ *Ibid.*, annex III, D.

⁶ *Ibid.*, annex III, E.

⁷ A/C.1/879.

⁸ A/C.1/881.

II

1. *Endorses* the recommendations set forth in the report of the Committee on the Peaceful Uses of Outer Space concerning the exchange of information;⁹

2. *Notes with appreciation* that a number of Member States have already on a voluntary basis, provided information on their national space programmes, and urges other States and regional and international organizations to do so;

3. *Urges* all Member States and appropriate specialized agencies to give whole-hearted and effective support to the international programmes mentioned in the report and already under way, including the International Year of the Quiet Sun and the World Magnetic Survey;

4. *Notes* that the Committee on the Peaceful Uses of Outer Space considers that the creation and use of sounding rocket launching facilities under United Nations sponsorship would contribute to the achievement of the objectives of resolution 1721 (XVI) by furthering international collaboration in space research and the advancement of human knowledge, and by providing opportunity for valuable practical training for interested users;

5. *Notes* the recommendation that Member States should consider the establishment under United Nations sponsorship of a sounding rocket facility, or facilities, on the geomagnetic equator, in time for the International Year of the Quiet Sun;

6. *Endorses* the basic principles suggested by the Committee on the Peaceful Uses of Outer Space for the operation of such facilities under United Nations sponsorship;

7. *Affirms* that such facilities when established and operated in accordance with these principles, shall, at the request of the host Member State, be eligible for United Nations sponsorship;

III

1. *Notes with appreciation* the prompt initial response of the World Meteorological Organization to the request of the General Assembly, as embodied in resolution 1721 C (XVI), that it report on a programme to advance atmospheric science research and to develop improved weather forecasting capabilities in the light of developments in outer space;¹⁰

⁹ A/5181, para. 14.

¹⁰ A/5229.

2. *Calls upon Member States to strengthen weather forecasting services and to encourage their scientific communities to co-operate in the expansion of atmospheric science research;*

3. *Recommends that the World Meteorological Organization, in consultation with other United Nations agencies and governmental and non-governmental organizations, should develop in greater detail its plan for an expanded programme to strengthen meteorological services and research, placing particular emphasis on the use of meteorological satellites and on the expansion of training and educational opportunities in these fields;*

4. *Invites the International Council of Scientific Unions through its member unions and national academies to develop an expanded programme of atmospheric science research which will complement the programmes fostered by the World Meteorological Organization;*

5. *Invites United Nations agencies concerned with the granting of technical and financial assistance, in consultation with the World Meteorological Organization, to give sympathetic consideration to requests from Member States for technical and financial assistance to supplement their own resources for these activities, including the improvement of meteorological networks;*

6. *Requests the World Meteorological Organization, following its Congress in April 1963, to report to the Committee on the Peaceful Uses of Outer Space, and to the Economic and Social Council at its thirty-sixth session, on steps taken relating to these activities;*

IV

1. *Notes with appreciation the prompt initial response of the International Telecommunication Union to the request of the General Assembly, as embodied in resolution 1721 D (XVI), that it report on those aspects of space communications in which international co-operation will be required;¹¹*

2. *Believes that communication by satellite offers great benefits to mankind, as it will permit the expansion of radio, telephone and television transmissions, including the broadcast of United Nations activities, thus facilitating contact among the peoples of the world;*

3. *Emphasizes the importance of international co-operation to achieve effective satellite communications which will be available on a world-wide basis;*

4. *Observes that the Secretary-General of the International Telecommunication Union has invited members to submit information on:*

¹¹ A/5237.

(a) Technical progress and developments in space telecommunications;

(b) Subjects which they regard as appropriate for international co-operation in order to achieve the objectives set forth in General Assembly resolution 1721 D (XVI);

(c) Which of those subjects, if any, should be included in the agenda of the Extraordinary Administrative Radio Conference to be held in October 1963;

5. *Notes* that the Secretary-General of the International Telecommunication Union, in the light of the replies, will report on these questions to the next meeting of its Administrative Council in March 1963 in order that the Council may complete the agenda for this Conference;

6. *Considers* it of the utmost importance that this Conference make allocations of radio frequency bands sufficient to meet expected outer space needs;

7. *Requests* the International Telecommunication Union to report to the Committee on the Peaceful Uses of Outer Space, and to the Economic and Social Council at its thirty-sixth session, on progress made relating to its outer space activities.

*1192nd plenary meeting,
14 December 1962.*

ANNEX 4

United Nations General Assembly Resolution 1962 (XVIII). Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space. December 24, 1963.

The General Assembly,

Inspired by the great prospects opening up before mankind as a result of man's entry into outer space,

Recognizing the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes,

Believing that the exploration and use of outer space should be carried on for the betterment of mankind and for the benefit of States irrespective of their degree of economic or scientific development,

Desiring to contribute to broad international co-operation in the scientific as well as in the legal aspects of exploration and use of outer space for peaceful purposes,

Believing that such co-operation will contribute to the development of mutual understanding and to the strengthening of friendly relations between nations and peoples,

Recalling its resolution 110 (II) of 3 November 1947, which con-

demned propaganda designed or likely to provoke or encourage any threat to the peace, breach of the peace, or act of aggression, and considering that the aforementioned resolution is applicable to outer space,

Taking into consideration its resolutions 1721 (XVI) of 20 December 1961 and 1802 (XVII) of 14 December 1962, adopted unanimously by the States Members of the United Nations,

Solemnly declares that in the exploration and use of outer space States should be guided by the following principles:

1. The exploration and use of outer space shall be carried on for the benefit and in the interests of all mankind.
2. Outer space and celestial bodies are free for exploration and use by all States on a basis of equality and in accordance with international law.
3. Outer space and celestial bodies are not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.
4. The activities of States in the exploration and use of outer space shall be carried on in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international co-operation and understanding.
5. States bear international responsibility for national activities in outer space, whether carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried on in conformity with the principles set forth in the present Declaration. The activities of non-governmental entities in outer space shall require authorization and continuing supervision by the State concerned. When activities are carried on in outer space by an international organization, responsibility for compliance with the principles set forth in this Declaration shall be borne by the international organization and by the States participating in it.
6. In the exploration and use of outer space, States shall be guided by the principle of co-operation and mutual assistance and shall conduct all their activities in outer space with due regard for the corresponding interests of other States. If a State has reason to believe that an outer space activity or experiment planned by it or its nationals would cause potentially harmful interference with activities of other States in the peaceful exploration and use of outer space, it shall undertake appropriate international consultations before proceeding with any such activity or experiment. A State which has reason to believe that an outer space activity or ex-

periment planned by another State would cause potentially harmful interference with activities in the peaceful exploration and use of outer space may request consultation concerning the activity or experiment.

7. The State on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and any personnel thereon, while in outer space. Ownership of objects launched into outer space, and of their component parts, is not affected by their passage through outer space or by their return to the earth. Such objects or component parts found beyond the limits of the State of registry shall be returned to that State, which shall furnish identifying data upon request prior to return.

8. Each State which launches or procures the launching of an object into outer space, and each State from whose territory or facility an object is launched, is internationally liable for damage to a foreign State or to its natural or juridical persons by such object or its component parts on the earth, in air space, or in outer space.

9. States shall regard astronauts as envoys of mankind in outer space, and shall render to them all possible assistance in the event of accident, distress, or emergency landing on the territory of a foreign State or on the high seas. Astronauts who make such a landing shall be safely and promptly returned to the State of registry of their space vehicle.

*1280th plenary meeting,
13 December 1963.*

ANNEX 5

United Nations General Assembly Resolution 1963 (XVIII). International co-operation in the peaceful uses of outer space. December 24, 1963.

The General Assembly,

Recalling its resolutions 1721 (XVI) of 20 December 1961 and 1802 (XVII) of 14 December 1962 on international co-operation in the peaceful uses of outer space,

Having considered the report submitted by the Committee on the Peaceful Uses of Outer Space,¹

Mindful of the benefits which all Member States would enjoy by participation in international programmes of co-operation in this field,

¹ A/5549 and Add. 1.

I

1. *Recommends* that consideration should be given to incorporating in international agreement form, in the future as appropriate, legal principles governing the activities of States in the exploration and use of outer space;

2. *Requests* the Committee on the Peaceful Uses of Outer Space to continue to study and report on legal problems which may arise in the exploration and use of outer space, and in particular to arrange for the prompt preparation of draft international agreements on liability for damage caused by objects launched into outer space and on assistance to and return of astronauts and space vehicles;

3. *Further requests* the Committee on the Peaceful Uses of Outer Space to report to the General Assembly at its nineteenth session on the results achieved in preparing these two agreements;

II

1. *Endorses* the recommendations contained in the report of the Committee on the Peaceful Uses of Outer Space concerning exchange of information, encouragement of international programmes, international sounding rocket facilities, education and training and potentially harmful effects of space experiments;

2. *Welcomes* the decision of the Committee on the Peaceful Uses of Outer Space to undertake, in co-operation with the Secretary-General and making full use of the functions and resources of the Secretariat:

(a) The preparation of a working paper on the activities and resources of the United Nations, the specialized agencies and other competent international bodies relating to the peaceful uses of outer space;

(b) The preparation of a summary of national and co-operative international space activities;

(c) The preparation of a list of available bibliographic and abstracting services covering scientific and technical results and publications in space and space-related areas;

(d) The compilation, in co-operation with the United Nations Educational, Scientific and Cultural Organization, of reviews of information on facilities for education and training in basic subjects related to the peaceful uses of outer space in universities and other places of learning;

(e) The establishment, at the request of the Government of India, of a group of six scientists to visit the sounding rocket launching facility at Thumba and to advise the Committee on its eligibility for United Nations sponsorship in accordance with the

basic principles endorsed by the General Assembly in resolution 1802 (XVII);

3. *Notes with appreciation* that, in accordance with General Assembly resolution 1721 (XVI), the Secretary-General is maintaining a public registry of objects launched into orbit or beyond on the basis of information being furnished by Member States;

4. *Notes with appreciation* that certain Member States have, on a voluntary basis, provided information on their national space programmes and invites other Member States to do so;

5. *Invites* Member States to give favourable consideration to requests of countries desirous of participating in the peaceful exploration of outer space for appropriate training and technical assistance on a bilateral basis or on any other basis they see fit;

6. *Notes* the considerable measure of co-operation in the peaceful exploration and use of outer space under way among Member States;

7. *Notes* that the Union of Soviet Socialist Republics and the United States of America have reached an agreement looking towards co-operation in the fields of satellite meteorology, communications and magnetic field mapping;

8. *Encourages* Member States to continue and extend co-operative arrangements so that all Member States can benefit from the peaceful exploration and use of outer space;

9. *Believes* that international co-operation can be beneficial in furthering the exploration of the solar system;

III

1. *Notes with appreciation:*

(a) The second report of the World Meteorological Organization in the advancement of atmospheric sciences and their application in the light of developments in outer space;²

(b) The organizational and financial steps taken by the Fourth Congress of the World Meteorological Organization in response to resolutions 1721 C (XVI) and 1802 (XVII), section III;

2. *Endorses* efforts towards the establishment of a World Weather Watch under the auspices of the World Meteorological Organization to include the use of satellite as well as conventional data, with data centres to facilitate the effectiveness of the system;

3. *Urges* Member States:

(a) To extend their national and regional meteorological efforts to implement the expanded programme of the World Meteorological Organization;

² E/3794.

(b) To co-operate in the establishment of the World Weather Watch;

(c) To increase research and training in the atmospheric sciences;

4. *Invites* the World Meteorological Organization to make a progress report to the Committee on the Peaceful Uses of Outer Space in 1964 relating to its activities in this field;

IV

1. *Notes with appreciation* the second report of the International Telecommunication Union on telecommunication and the peaceful uses of outer space;³

2. *Welcomes* the decisions of the Extraordinary Administrative Radio Conference, held in October and November 1963 under the auspices of the International Telecommunication Union, on the allocation of frequency bands for space communication and procedures for their use as a step in the development of space radio communications;

3. *Invites* the International Telecommunication Union to make a progress report to the Committee on the Peaceful Uses of Outer Space in 1964 relating to its activities in this field;

4. *Recognizes* the potential contribution of communications satellites in the expansion of global telecommunications facilities and the possibilities this offers for increasing the flow of information and for furthering the objectives of the United Nations and its agencies;

V

Requests the Committee on the Peaceful Uses of Outer Space to continue its work as set forth in General Assembly resolutions 1472 (XIV), 1721 (XVI) and 1802 (XVII), as well as in the present resolution, and to report to the Assembly at its nineteenth session on the activities of the Committee.

*1280th plenary meeting,
13 December 1963.*

³ E/3770.

ANNEX 6

United Nations General Assembly Resolution 1148 (XII). Extract relating to the sending of objects through outer space for exclusively peaceful and scientific purposes. November 14, 1957.¹

¹ *Documents on Disarmament, 1945-1959* (Department of State publication 7008; 1960), vol. II, pp. 914-915.

The General Assembly:

* * * * *

1. *Urges* that the States concerned, and particularly those which are members of the Sub-Committee of the Disarmament Commission, give priority to reaching a disarmament agreement which, upon its entry into force will provide for the following:

* * * * *

(f) The joint study of an inspection system designed to ensure that the sending of objects through outer space shall be exclusively for peaceful and scientific purposes.

* * * * *

ANNEX 7

United Nations General Assembly Resolution 1348 (XVIII). Question of the Peaceful Use of Outer Space. December 13, 1958.¹

The General Assembly,

Recognizing the common interest of mankind in outer space and that it is the common aim that it should be used for peaceful purposes only,

Bearing in mind the provision of Article 2, paragraph 1, of the Charter, which states that "the Organization is based on the principle of the sovereign equality of all its Members,"

Wishing to avoid the extension of present national rivalries into this new field,

Desiring to promote energetically the fullest exploration and exploitation of outer space for the benefit of mankind,

Conscious that recent developments in respect of outer space have added a new dimension to man's existence and opened new possibilities for the increase of his knowledge and the improvement of his life,

Noting the success of the scientific cooperative program of the International Geophysical Year in the exploration of outer space and the decision to continue and expand this type of cooperation,

Recognizing the great importance of international cooperation in the study and utilization of outer space for peaceful purposes,

Considering that such cooperation will promote mutual understanding and the strengthening of friendly relations among peoples,

Believing that the development of programs of international and scientific cooperation in the peaceful uses of outer space should be vigorously pursued,

Believing that progress in this field will materially help to achieve the aim that outer space should be used for peaceful purposes only,

¹ *Documents on Disarmament, 1945-59*, vol. II, p. 1305.

Considering that an important contribution can be made by the establishment within the framework of the United Nations of an appropriate international body for cooperation in the study of outer space for peaceful purposes,

Desiring to obtain the fullest information on the many problems relating to the peaceful uses of outer space before recommending specific programs of international cooperation in this field,

1. *Establishes* an *ad hoc* committee on the peaceful uses of outer space consisting of the representatives of Argentina, Australia, Belgium, Brazil, Canada, Czechoslovakia, France, India, Iran, Italy, Japan, Mexico, Poland, Sweden, the Union of Soviet Socialist Republics, the United Arab Republic, the United Kingdom of Great Britain and Northern Ireland and the United States of America and requests it to report to the General Assembly at its fourteenth session on the following:

(a) The activities and resources of the United Nations, of its specialized agencies and of other international bodies relating to the peaceful uses of outer space;

(b) The area of international cooperation and programs in the peaceful uses of outer space which could appropriately be undertaken under United Nations auspices to the benefit of States irrespective of the state of their economic or scientific development, taking into account the following proposals, among others:

(i) Continuation on a permanent basis of the outer space research now being carried on within the framework of the International Geophysical Year;

(ii) Organization of the mutual exchange and dissemination of information on outer space research; and

(iii) Coordination of national research programs for the study of outer space, and the rendering of all possible assistance and help towards their realization;

(c) The future organizational arrangements to facilitate international cooperation in this field within the framework of the United Nations;

(d) The nature of legal problems which may arise in the carrying out of programs to explore outer space;

2. *Requests* the Secretary-General to render appropriate assistance to the above-named Committee and to recommend any other steps that might be taken within the existing United Nations framework to encourage the fullest international cooperation for the peaceful uses of outer space.

ANNEX 8

United States of America: Draft Proposal on Assistance to and Return of Space Vehicles and Personnel. September 11, 1962.¹

The General Assembly,

Recognizing that the personnel of space vehicles may from time to time be the subject of accident or experience conditions of distress,

Recognizing that there may occur landings of space vehicles, and their personnel in the case of manned vehicles, by reason of accident, distress, or mistake, or otherwise than as planned,

Believing that in such circumstances the action of States should be governed by humanitarian concern and with a due regard for scientific needs,

Commends to States for their guidance the following principles:

1. All possible assistance shall be rendered to the personnel of space vehicles who may be the subject of accident or experience conditions of distress or who may land by reason of accident, distress, or mistake, or otherwise than as planned;

2. Space vehicles and their personnel in the case of manned vehicles, that land by reason of accident, distress, or mistake, or otherwise than as planned, shall be safely and promptly returned to the State or States or international organization responsible for launching.

3. Any expense incurred in providing assistance to or return of space vehicles and their personnel shall be borne by the State or States or international organization responsible for launching.

¹ U.N. Doc. A/AC.105/L.4; U.N. Doc. A/5181, Annex III.

ANNEX 9

United States of America: Draft Proposals on Liability for Space Vehicle Accidents. September 11, 1962.¹

The United Nations Committee on the Peaceful Uses of Outer Space,

Recognizing that there may occur personal injury, loss of life, or property damage as a result of space vehicle accidents,

Recognizing that States and international organizations responsible for the launching of space vehicles should be liable internationally for such injury, loss, or damage,

Believing that there should be agreed rules and procedures applicable to such cases,

¹ U.N. Doc. A/AC.105/L.5; U.N. Doc. A/5181, Annex III.

1. *Requests* the Secretary-General to constitute a small advisory panel of legal experts drawn from various geographic areas;

2. *Requests* the advisory panel thus constituted to prepare a draft of an international agreement dealing with the liability of States and international organizations for injury, loss, or damage caused by space vehicles;

3. *Commends* to the advisory panel for its guidance the following principles:

(a) States or international organizations responsible for the launching of space vehicles should be liable internationally for personal injury, loss of life, or property damage caused thereby, whether such injury, loss, or damage occurs on land, on the sea, or in the air;

(b) A claim based on personal injury, loss of life, or property damage caused by a space vehicle should not require proof of fault on the part of the State or States or international organization responsible for launching the space vehicle in question, although the degree of care which ought reasonably to have been exercised by the person or entity on whose behalf claim is made might properly be taken into account;

(c) A claim may be presented internationally to the State or States or international organization responsible for the launching of a space vehicle causing injury, loss, or damage without regard to the prior exhaustion of any local remedies that may be available;

(d) The presentation of a claim should be made within a reasonable time after the occurrence of injury, loss, or damage;

(e) The International Court of Justice should have jurisdiction to adjudicate any dispute relating to the interpretation or application of the international agreement on liability in the absence of agreement between the States concerned upon another means of settlement;

4. *Requests* the advisory panel to transmit the draft international agreement to the Legal Sub-Committee at an early date.

ANNEX 10

United States of America: Draft Declaration of Principles Relating to the Exploration and Use of Outer Space. December 8, 1962.¹

The General Assembly,

Recalling its resolution 1721 (XVI), adopted on 20 December 1961,

Recognizing the common interest of all mankind in furthering the peaceful exploration and use of outer space,

¹ U.N. Doc. A/C.1/881, 23.

Believing that the exploration and use of outer space should be for the betterment of mankind and to the benefit of States irrespective of the stage of their economic or scientific development,

Considering the great importance of international co-operation in this field of human activity,

Believing that such co-operation will contribute to the development of mutual understanding and to the strengthening of friendly relations among nations and peoples,

Commends to States for their guidance in the exploration and use of outer space the following declaration of principles:

1. Outer space and celestial bodies are free for exploration and use by all states, on the basis of equal rights, in conformity with international law;

2. In the exploration and use of outer space and celestial bodies, States are bound by the relevant rules of international law and the relevant provisions of international treaties and agreements including the Charter of the United Nations;

3. Outer space and celestial bodies are not subject to national appropriation;

4. States shall render all possible assistance to the personnel of space vehicles who may be the subject of accident or experience conditions of distress, or who may land by reason of accident, distress, or mistake. Space vehicle personnel who make such a landing shall be safely and promptly returned to the launching authority;

5. States shall return to the launching authority any space vehicle or part that has landed by reason of accident, distress, or mistake. Upon request, the launching authority shall furnish identifying data prior to return;

6. A State or international organization from whose territory or with whose assistance or permission a space vehicle is launched bears international responsibility for the launching, and is internationally liable for personal injury, loss of life, or property damage caused by such vehicle on the earth or in air space;

7. Jurisdiction over a space vehicle while it is in outer space shall be retained by the State or international organization which had jurisdiction at the time of launching. Ownership and property rights in a space vehicle and its components remain unaffected in outer space or upon return to the earth.

ANNEX 11

United States of America: Letter from the United States Representative (Lodge) to the U.N. Secretary General, with Attached Explanatory Memorandum. September 2, 1958.¹

¹ General Assembly Official Records: Thirteenth Session, Annexes, Agenda Item 60, p. 4.

I have the honour to request the inclusion of the agenda of the thirteenth General Assembly of an item of an important and urgent character entitled:

"Programme for international co-operation in the field of outer space."

In accordance with rule 20 of the rules of procedure an explanatory memorandum is attached.

(Signed) HENRY CABOT LODGE,
*Permanent Representative of the United States of
 America to the United Nations.*

Explanatory memorandum

1. Perhaps no event in history has caught the imagination of all mankind more than the development of the new universal frontier through the launching of earth satellites by the Soviet Union and the United States as part of the programme for the International Geophysical Year. The United States is pleased that these first steps to project man's life and knowledge into outer space have been taken under the auspices of this co-operative scientific programme.

2. Outer-space developments are a matter of international concern, because the exploration and eventual exploitation of outer space will affect the life of every human being. Moreover, the nature and immensity of the challenge facing us and the interest it holds for scientists make it clear that activities in outer space can and must be carried out with the appropriate international co-operation and co-ordination within the framework of the United Nations.

3. It is clear that the potentialities for good or evil that will arise from the exploration of outer space are enormous. The potential uses of outer space for destructive purposes are only too apparent. On the other hand, the potential uses of outer space for peaceful purposes in science and engineering, in medicine, in meteorology, in communications, in transportation, etc., can enrich the lives of all men. Urgent steps are therefore needed to lay a solid basis for international co-operation in development of the peaceful uses of outer space. Such steps can be taken while parallel efforts are being made to conclude meaningful agreements on the disarmament aspects of outer space.

4. The General Assembly, as the body most representative of the interests of mankind, should begin to make the necessary steps to further those interests by declaring itself on the separability of the question of the peaceful uses of outer space from that of disarmament; by giving its support to the principle of the peaceful utilization of outer space; by expressing itself in principle to be in favour of the establishment of appropriate international machinery; and by

preparing for further careful consideration of this vital but complex matter through the establishment of a representative *ad hoc* committee to make the necessary detailed studies and recommendations as to what specific steps the Assembly might take to further man's progress in this field and to assure that outer space will be used solely for the benefit of all mankind.

5. To this end the United States requests that the item "Programme for international co-operation in the field of outer space" be placed upon the agenda of the thirteenth session of the General Assembly as an important and urgent matter and will submit a draft resolution to the General Assembly for its consideration.

ANNEX 12

United States of America: Address by Secretary of State Dulles to the General Assembly. Extract. September 18, 1958.¹

* * * * *

The United States believes that the United Nations should take immediate steps to prepare for a fruitful program on international cooperation in the peaceful uses of outer space. We suggest that a representative committee be established to make the necessary preparatory studies and recommendations.

The United States is submitting to the Assembly a resolution with the following significant operative paragraph.

The General Assembly—

1. Establishes an Ad Hoc Committee consisting of _____ and requests it to report to the Fourteenth General Assembly on the following:

(a) The activities and resources of the United Nations and its specialized agencies relating to outer space;

(b) The nature of specific projects of international cooperation in outer space which could be undertaken under United Nations auspices;

(c) Useful United Nations organizational arrangements to facilitate international cooperation in this field.

* * * * *

ANNEX 13

United Nations General Assembly Resolution 1884 (XVIII). Question of general and complete disarmament. October 17, 1963.

The General Assembly,

¹ Department of State Bulletin, Oct. 6, 1958, p. 529.

Recalling its resolution 1721 A (XVI) of 20 December 1961, in which it expressed the belief that the exploration and use of outer space should be only for the betterment of mankind,

Determined to take steps to prevent the spread of the arms race to outer space,

1. *Welcomes the expressions by the Union of Soviet Socialist Republics and the United States of America of their intention not to station in outer space any objects carrying nuclear weapons or other kinds of weapons of mass destruction;*

2. *Solemnly calls upon all States:*

(a) *To refrain from placing in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, installing such weapons on celestial bodies, or stationing such weapons in outer space in any other manner;*

(b) *To refrain from causing, encouraging or in any way participating in the conduct of the foregoing activities.*

*1244th plenary meeting,
17 October 1963.*

ANNEX 14

United Arab Republic: Draft Code for International Co-operation in the Peaceful Uses of Outer Space. September 14, 1962.¹

The Committee on the Peaceful Uses of Outer Space,

Having in mind that the Members of the United Nations, according to the Charter, are determined to save succeeding generations from the scourge of war,

Recognizing that it is imperative in the interest of mankind that activities in outer space should be exclusively devoted to the peaceful uses of outer space,

Recognizing further that the General Assembly, in its resolution 1721 (XVI), has urged that the United Nations be a focal point for international co-operation in the peaceful exploration and uses of outer space,

Noting the inter-relationship of the technical and legal aspects of any activity in outer space,

Conscious of the impact of consolidating the efforts of Member States in promoting international co-operation in the peaceful uses of outer space,

Believing that, to reach this end, it is necessary to have as guidance a framework which defines the future of its activities,

¹ U.N. Doc. A/AC.105/L.6; U.N. Doc. A/5181.

I

Decides that the Committee should be guided in its work by the following principles:

1. That the activities of Member States in outer space should be confined solely to the peaceful uses;
2. That in their policies toward outer space Member States should promote international and peaceful co-operation;
3. That Member States bear special responsibility emanating from their obligations to secure the safety of space for astronauts in outer space;
4. That Member States agree to provide every possible assistance to personnel of space vehicles who may be the subject of accident or experience conditions of distress or who may land by reason of accident, distress or mistake;
5. That Member States undertake to return to the State or international organization responsible for launching space vehicles these space vehicles and its personnel;
6. That one of the main objectives in international peaceful co-operation in outer space is to develop special programmes in which the developing countries can participate with a view to promoting world-wide interest in outer space;
7. That Member States agree to make full use of the facilities and experience of all international organizations, specialized agencies and nongovernmental organizations, which have activities in outer space;
8. That Member States will exert every possible effort to provide the United Nations Secretary-General, on a voluntary basis, with all information necessary for the promoting of international co-operation in the peaceful uses of outer space;
9. That Member States undertake to give all possible assistance to the United Nations and its affiliated organizations, to undertake joint programmes of training and research to promote science and technology in outer space.

ANNEX 15

Union of Soviet Socialist Republics: Draft International Agreement on the Rescue of Astronauts and Spaceships Making Emergency Landings. September 10, 1962.¹

The Governments of -----,
Recognizing the common interest of mankind in furthering the peaceful uses of outer space,

¹ U.N. Doc. A/AC.105/L.3; U.N. Doc. A/5181.

Wishing to do their utmost to assist the crews of spaceships which may meet with an accident,

Have decided to conclude this Agreement and for this purpose have appointed their representatives who, having exchanged their full powers, found in good and due form, have agreed on the following provisions:

ARTICLE 1

Each Contracting State shall render assistance to the crews of spaceships which have met with an accident and shall take steps to rescue astronauts making an emergency landing; to this end it shall employ every means at its disposal, including electronic and optical equipment, means of communication, and rescue facilities of different kinds.

ARTICLE 2

A Contracting State which discovers that the crew of a spaceship of another Contracting State has met with an accident shall do its utmost to notify the launching State without delay.

ARTICLE 3

In the event of astronauts of a Contracting State making an emergency landing on the territory of another Contracting State, the latter shall immediately inform the launching State of the occurrence and shall take all possible steps to rescue the astronauts making the emergency landing and to render them the necessary assistance.

ARTICLE 4

If the astronauts are presumed to have made an emergency descent on the high seas, a joint search for them shall be made, if necessary, by those Contracting States to which the launching State may make application.

ARTICLE 5

The assistance to be furnished when necessary by one Contracting State to another Contracting State shall in no way differ from the assistance which could be furnished to its own astronauts.

ARTICLE 6

Each Contracting State shall do its utmost to facilitate the early return to their own country of any astronauts of another Contracting State who may make an emergency landing on its territory or who may be rescued on the high seas.

ARTICLE 7

Foreign spaceships, satellites and capsules found by a Contracting State on its territory or salvaged on the high seas shall be returned

without delay to the launching State if they have identification marks showing their national origin and if the launching State has officially announced the launching of the devices found.

Space vehicles aboard which devices have been discovered for the collection of intelligence information in the territory of another State shall not be returned.

ARTICLE 8

The expenses incurred by a State in fulfilling the obligations provided for in articles 6 and 7 of this Agreement shall be reimbursed by the launching State.

ARTICLE 9

This Agreement shall be open for accession to all the States of the world.

ANNEX 16

Union of Soviet Socialist Republics: Draft Declaration of the Basic Principles Governing the Activities of States in the Exploration and Use of Outer Space. April 16, 1963.¹

The Governments of the States whose representatives have signed this Declaration,

Inspired by the great prospects opening up before mankind as a result of penetration into outer space,

Recognizing the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes,

Believing that the exploration and use of outer space should be for the betterment of mankind and for the benefit of States irrespective of their degree of economic or scientific development,

Desiring to promote broad international co-operation in the exploration and use of outer space for peaceful purposes,

Believing that such co-operation will contribute to the development of mutual understanding and to the strengthening of friendly relations between nations and peoples,

Taking into consideration General Assembly resolutions 1721 (XVI) and 1802 (XVII), approved unanimously by all the States Members of the United Nations,

Noting the interrelationship of the technical and legal aspects of the activities of States in outer space,

Solemnly declare that in the exploration and use of outer space they will be guided by the following principles:

1. The exploration and use of outer space shall be carried out for the benefit and in the interests of the whole of mankind.

¹ U.N. Doc. A/AC.105/C.2/L.6.

2. Outer space and celestial bodies are free for exploration and use by all States; sovereignty over outer space or celestial bodies cannot be acquired by use or occupation or in any other way.

3. All States have equal rights to explore and use outer space.

4. The activities of States pertaining to the conquest of outer space shall be carried out in accordance with the principles of the United Nations Charter and with other generally recognized principles of international law in the interests of developing friendly relations among nations and of maintaining international peace and security.

5. The use of outer space for propagating war, national or racial hatred or enmity between nations is inadmissible.

6. Co-operation and mutual assistance in the conquests of outer space shall be a duty incumbent upon all States; any measures that might in any way hinder the exploration or use of outer space for peaceful purposes by other countries may be implemented only after prior discussion of and agreement upon such measures between the countries concerned.

7. All activities of any kind pertaining to the exploration and use of outer space shall be carried out solely by States. If States undertake activities in outer space collectively, either through international organizations or otherwise, each State participating in such activities has a responsibility to comply with the principles set forth in this Declaration.

8. States shall retain their sovereign rights over objects they launch into outer space. Rights of ownership in respect of objects launched into outer space and their components remain unaffected while they are in outer space and upon their return to the earth.

9. The use of artificial satellites for the collection of intelligence information in the territory of a foreign State is incompatible with the objectives of mankind in its conquest of outer space.

10. States shall regard cosmonauts as envoys of mankind in outer space and shall render all possible assistance to spaceships and their crews which may make an emergency landing on the territory of a foreign State or on the high seas; spaceships, satellites or capsules found beyond the limits of the launching State shall be returned to that State.

11. A State undertaking activities in outer space bears international responsibility for damage done to a foreign State or to its physical or juridical persons as a result of such activities.

The Governments of the States signatories to this Declaration call upon all the States of the world to accede to it.

ANNEX 17

Belgium: Working Paper Submitted by the Belgian Delegation on the Unification of Certain Rules Governing Liability for Damage Caused by Space Vehicles. April 30, 1963.¹

Field of Application

Art. 1(a) The following provisions shall apply to compensation for damage caused to persons or property by one or more space devices except where such damage is caused on the territory of the State where the launching of the device or devices takes place, the State whose flag the device or devices fly or the State or States claiming ownership or co-ownership of the device or devices.

(b) By "damage" shall be understood any loss for which compensation may be claimed under the national law of the injured person, including judicial and legal costs and interest.

By "person" shall be understood any natural or legal person in public or private law.

By "property" shall be understood any movable or immovable property.

By "territory of a State" shall be understood its land areas, its territorial and adjacent waters, ships flying its flag and aircraft registered by it.

By "space device" shall be understood any device which is intended to move in space, remaining there by means other than the reaction of the air.

States which are liable

Art. 2. The following shall be held liable for damage within the meaning of article 1 at the choice of the plaintiff, there being no joint liability or solidarity:

the State on whose territory the space device was launched, or

the State whose flag the space device flies, or

the State or States claiming ownership or co-ownership of the space device.

By "plaintiff" shall be understood the State which has been injured or whose nationals or residents have been injured.

Nature of the liability

Art. 3. The occurrence of the event causing the damage shall entail an obligation to give compensation once proof has been given that there is a relationship of cause and effect between the damage, on the one hand, and the launching, motion or descent of all or part of the space device, on the other hand.

¹ U.N. Doc. A/AC.105/C.2/L.7; U.N. Doc. A/AC.105/12, Annex I, 10-12.

The presence or absence of a relationship of cause and effect shall be determined in accordance with the national law of the person injured.

Extent of liability

Art. 4. The extent of the obligation to give compensation shall be determined in accordance with the provisions of the ordinary law of the country of the person injured.

Procedure for bringing action for liability

Art. 5.(a) Within twelve months of the occurrence of the damage, the plaintiff State shall submit, through the diplomatic channel, to the State considered liable under article 1 all claims for compensation relating to the State itself or to its nationals or residents.

If the State which is liable does not take a decision considered satisfactory by the plaintiff State within six months, the latter shall be entitled to take the claims for compensation before the International Court of Justice. The plaintiff State must act within six months of being notified of the decision in question.

The States ratifying or acceding to these articles undertake to comply with the judgment given by the International Court of Justice within three months of being notified thereof.

(b) There may be no interruption or suspension of the periods specified in paragraph (a) above.

(c) There shall be joinder of actions when there is more than one plaintiff in respect of damage due to one and the same event or when more than one State is liable if more than one space device was responsible for the damage.

Art. 6. These articles shall enter into force between the Contracting States on the date of the deposit of the instruments of ratification or accession at United Nations Headquarters, irrespective of the number of States which have ratified them or acceded to them.

ANNEX 18

United Kingdom of Great Britain and Northern Ireland: Draft Declaration of Basic Principles Governing the Activities of States Pertaining to the Exploration and Use of Outer Space. December 4, 1962.¹

1. Outer space and celestial bodies are free for exploration and use by all States in conformity with international law. This freedom shall include free navigation by means of space vehicles, the establishment of space stations and other like devices, the conduct of scientific research, and the landing on and exploration of celestial

¹ U.N. Doc. A/C.1/879.

bodies, and shall be exercised by all States with due regard to the interests of other States in the exploration and use of outer space, and to the need for consultation and co-operation between States in relation to such exploration and use.

2. Outer space and celestial bodies are not capable of appropriation or exclusive use by any State. Accordingly, no State may claim sovereignty over outer space or over any celestial body, nor can such sovereignty be acquired by means of use or occupation or in any other way.

3. In the exploration and use of outer space and celestial bodies States are bound by international law and by the provisions of the United Nations Charter and other international agreements which may be applicable.

4. All States shall, for themselves and for their nationals, have equal rights in the exploration and use of outer space. These rights shall be exercised in accordance with international law and with the principles affirmed in this Declaration.

ANNEX 19

Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water. August 5, 1963.¹ Signed at Moscow August 5, 1963; in force October 10, 1963.

The Governments of the United States of America, the United Kingdom of Great Britain and Northern Ireland, and the Union of Soviet Socialist Republics, hereinafter referred to as the "Original Parties",

Proclaiming as their principal aim the speediest possible achievement of an agreement on general and complete disarmament under strict international control in accordance with the objectives of the United Nations which would put an end to the armaments race and eliminate the incentive to the production and testing of all kinds of weapons, including nuclear weapons,

Seeking to achieve the discontinuance of all test explosions of nuclear weapons for all time, determined to continue negotiations to this end, and desiring to put an end to the contamination of man's environment by radioactive substances,

Have agreed as follows:

ARTICLE I

1. Each of the Parties to this Treaty undertakes to prohibit, to prevent, and not to carry out any nuclear weapon test explosion, or

¹ White House Press Release, July 25, 1963; 49 *Department of State Bulletin* 239 (1963); Sen. Exec. M, 88th Cong., 1st Sess.

any other nuclear explosion, at any place under its jurisdiction or control:

(a) in the atmosphere; beyond its limits, including outer space; or underwater, including territorial waters or high seas; or

(b) in any other environment if such explosion causes radioactive debris to be present outside the territorial limits of the state under whose jurisdiction or control such explosion is conducted. It is understood in this connection that the provisions of this subparagraph are without prejudice to the conclusion of a treaty resulting in the permanent banning of all nuclear test explosions, including all such explosions underground, the conclusion of which, as the Parties have stated in the Preamble to this Treaty, they seek to achieve.

2. Each of the Parties to this Treaty undertakes furthermore to refrain from causing, encouraging, or in any way participating in, the carrying out of any nuclear weapon test explosion, or any other nuclear explosion, anywhere which would take place in any of the environments described, or have the effect referred to, in paragraph 1 of this article.

ARTICLE II

1. Any Party may propose amendments to this Treaty. The text of any proposed amendment shall be submitted to the Depositary Governments which shall circulate it to all Parties to this Treaty. Thereafter, if requested to do so by one-third or more of the Parties, the Depositary Governments shall convene a conference, to which they shall invite all the Parties, to consider such amendment.

2. Any amendment to this Treaty must be approved by a majority of the votes of all the Parties to this Treaty, including the votes of all of the Original Parties. The amendment shall enter into force for all Parties upon the deposit of instruments of ratification by a majority of all the Parties, including the instruments of ratification of all of the Original Parties.

ARTICLE III

1. This Treaty shall be open to all states for signature. Any state which does not sign this Treaty before its entry into force in accordance with paragraph 3 of this article may accede to it at any time.

2. This Treaty shall be subject to ratification by signatory states. Instruments of ratification and instruments of accession shall be deposited with the Governments of the Original Parties—the United States of America, the United Kingdom of Great Britain and

Northern Ireland, and the Union of Soviet Socialist Republics—which are hereby designated the Depositary Governments.

3. This Treaty shall enter into force after its ratification by all the Original Parties and the deposit of their instruments of ratification.

4. For states whose instruments of ratification or accession are deposited subsequent to the entry into force of this Treaty, it shall enter into force on the date of the deposit of their instruments of ratification or accession.

5. The Depositary Governments shall promptly inform all signatory and acceding states of the date of each signature, the date of deposit of each instrument of ratification of an accession to this Treaty, the date of its entry into force, and the date of receipt of any requests for conferences or other notices.

6. This Treaty shall be registered by the Depositary Governments pursuant to Article 102 of the Charter of the United Nations.

ARTICLE IV

This Treaty shall be of unlimited duration.

Each Party shall in exercising its national sovereignty have the right to withdraw from the Treaty if it decides that extraordinary events, related to the subject matter of this Treaty, have jeopardized the supreme interests of its country. It shall give notice of such withdrawal to all other Parties to the Treaty three months in advance.

ARTICLE V

This Treaty, of which the English and Russian texts are equally authentic, shall be deposited in the archives of the Depositary Governments. Duly certified copies of this Treaty shall be transmitted by the Depositary Governments to the Governments of the signatory and acceding States.

ANNEX 20

United Nations *Ad Hoc* Committee on the Peaceful Uses of Outer Space, Report to the United Nations General Assembly, Fourteenth Session. Extracts. July 14, 1959.¹

I. INTRODUCTION

A. Mandate of the Committee

1. The task of the *Ad Hoc* Committee on the Peaceful Uses of Outer Space under paragraph 1 (d) of General Assembly resolution 1348 (XIII) is to report on:

“The nature of legal problems which may arise in the carrying out of programmes to explore outer space.”

¹ U.N. Doc. A/4141, July 14, 1959; *Legal Problems of Space Exploration* 1267-1270 (1961).

2. The scope of the mandate thus given the Committee was the subject of discussion. It was recognized that the terms of reference of the Committee referred exclusively to the peaceful uses of outer space. One view expressed was that the task of the Committee related only to the identification and listing of legal problems which might arise in the carrying out of programmes to explore outer space and that the Committee was not called upon to formulate either general or particular solutions of those problems. Another view was that the Committee, in identifying and listing the problems should give some indication of the significance and implications of each problem and the priority which might be given to its solution. Others stressed the importance of giving attention to certain relevant general principles, such as those contained in the preamble and operative paragraph 1 (b) of resolution 1348 (XIII). It was also pointed out that, while paragraph 1 (d) of resolution 1348 (XIII) referred only to problems which might arise in the exploration of outer space, it was not always possible in relation to certain activities to differentiate between exploration and exploitation of outer space and that both the exploration and the exploitation of outer space were expressly mentioned in the preamble to the resolution.

3. The Committee recognized that it would be impossible at this stage to identify and define, exhaustively, all the juridical problems which might arise in the exploration of outer space. Recognizing the multiplicity of these juridical problems, the Committee considered that it could most usefully fulfill its mandate from the General Assembly, in view of the complex character of these problems, by: (1) selecting and defining problems that have arisen, or are likely to arise in the near future, in the carrying out of space programmes; (2) dividing the problems into two groups, those which may be amendable to early treatment and those which do not yet appear to be ripe for solution; and (3) indicating, without definite recommendation, various means by which answers to such problems might be pursued. The identification of legal problems entails, of necessity, some consideration of possible approaches to their solution, particularly with a view to presenting the best informed comment that can be made on the matter of priorities.

B. General observations

4. The Committee considered the relevance to space activities of the provisions of the United Nations Charter and of the Statute of the International Court of Justice, which synthesized the idea of co-operation between men and the joint achievement of great projects for the benefit of all mankind; it observed that as a matter of principle

ple those instruments were not limited in their operation to the confines of the earth. It considered as a worthy standard for international co-operation and programmes in the peaceful uses of outer space which could appropriately be undertaken under United Nations auspices, to the benefit of States irrespective of the state of their economic or scientific development, the principles set forth in the operative paragraph 1 (b) and the preamble of resolution 1348 (XIII), in which the General Assembly called attention to Article 2, paragraph 1, of the Charter which states that the Organization is based on the principle of the sovereign equality of all its Members, recognized the common interest of mankind in outer space and the common aim that it should be used for peaceful purposes only, and expressed the desire of promoting energetically the fullest exploration and exploitation of outer space for the benefit of mankind.

5. It was unanimously recognized that the principles and procedures developed in the past to govern the use of such areas as the air space and the sea deserved attentive study for possibly fruitful analogies that might be adaptable to the treatment of legal problems arising out of the exploration and use of outer space. On the other hand, it was acknowledged that outer space activities were distinguished by many specific factual conditions, not all of which were now known, that would render many of its legal problems unique.

6. The Committee agreed that some of the legal problems of outer space activities were more urgent and more nearly ripe for positive international agreement than others. It was felt that the progress of activities in outer space and of advances in science and technology would continually pose new problems relevant to the international legal order and modify both the character and the relative importance of existing problems. For example, future arrangements among Governments or private groups of scientists for cooperation in space research or the dissemination of space data may entail legal problems ranging from administrative or procedural arrangements to regulation or control. The Committee noted the indispensable usefulness of close and continuous co-operation between jurists and scientists to take these and other developments into account.

7. The Committee considered that a comprehensive code was not practicable or desirable at the present stage of knowledge and development. Despite the progress already made, it was emphasized that relatively little is so far known about the actual and prospective uses of outer space in all their possible varieties of technical significance, political context, and economic utility. It was pointed out that the rule of law is neither dependent upon, nor assured by, comprehensive codification and that premature codification might preju-

dice subsequent efforts to develop the law based on a more complete understanding of the practical problems involved. Although an attempt at comprehensive codification of space law was thought to be premature, the Committee also recognized the need both to take timely, constructive action and to make the law of space responsive to the facts of space.

8. For these reasons it was agreed that the rough grouping of legal problems according to the priority hereafter suggested should itself be kept under regular review by whatever means the General Assembly should deem fitting.

II. LEGAL PROBLEMS SUSCEPTIBLE OF PRIORITY TREATMENT

A. Question of freedom of outer space for exploration and use

9. During the IGY 1957-1958 and subsequently, countries throughout the world proceeded on the premise of the permissibility of the launching and flight of the space vehicles which were launched, regardless of what territory they passed "over" during the course of their flight through outer space. The Committee, bearing in mind that its terms of reference refer exclusively to the peaceful uses of outer space, believes that, with this practice, there may have been initiated the recognition or establishment of a generally accepted rule to the effect that, in principle, outer space is, on conditions of equality, freely available for exploration and use by all in accordance with existing or future international law or agreements.

B. Liability for injury or damage caused by space vehicles

10. Since injury or damage might result from the launching, flight and return to earth of various kinds of space vehicles or parts thereof, a number of problems exist with respect to defining and delimiting liability of the launching State and other States associated with it in the space activity causing injury or damage. First of all there is the question of the type of interest protected: that is, the kind of injury for which recovery may be had. Second, there is the question of the type of conduct giving rise to liability: should liability be without regard to fault for some or all activities, or should it be based upon fault? Third, should a different principle govern, depending on whether the place of injury is on the surface of the earth, in the air space or in outer space? Fourth, should liability of the launching State be unlimited in amount? Finally, where more than one State participates in a particular activity, is the liability joint or several?

11. What machinery should be utilized for determining liability and ensuring the payment of compensation if due? The Committee considered that early consideration should be given to agreement on submission to the compulsory jurisdiction of the International Court of Justice in disputes between States as to the liability of States for injury or damage caused by space vehicles.

12. When it considered the foregoing questions, the Committee noted that, in so far as concerns liability for surface damage caused by aircraft, there was formulated at Rome in 1952, under the aegis of ICAO, the Convention on damage caused by foreign aircraft to third parties on the surface. In the opinion of the Committee, that Convention and ICAO experience in relation thereto could be taken into account, *inter alia*, in any study that might be carried out in the future concerning liability for injury or damage caused by space vehicles. It was pointed out, however, that no international standards regarding safety and precautionary measures governing the launching and control of space vehicles had yet been formulated, and this fact also could be taken into account in studying analogies based on existing conventions.

C. Allocation of radio frequencies

13. It was recognized that there are stringent technical limits on the availability of radio frequencies for communications. The development of space vehicles will pose new and increasing demands on the radio spectrum. It was emphasized that rational allocation of frequencies for communications with and among space vehicles would be imperative. In this way, what might otherwise come to constitute paralysing interference among radio transmissions could be avoided.

14. Attention was drawn to the fact that there is already in existence and operation an international organization suited to the consideration of problems of radio frequency allocation for outer space uses, namely, the ITU. A technical committee of this organization has already issued a recommendation and a report which bear the following titles: "Selection of Frequencies Used in Telecommunication with and between Artificial Earth Satellites and other Space Vehicles" and "Factors Affecting the Selection of Frequencies for Telecommunication with and between Space Vehicles." The findings contained in these two documents will be presented to the Administrative Radio Conference of the ITU which will open in Geneva on 17 August 1959.

15. Attention should also be given to the desirability of terminating transmissions from space vehicles once these transmissions

have outlived their usefulness. Such a measure would help conserve and make optimum use of the frequencies which are assigned for outer space communications. In considering this problem, it would be necessary to balance this factor against the interest in conserving a means for continuous identification of space vehicles.

D. Avoidance of interference between space vehicles and aircraft

16. As the launchings of space vehicles become more numerous and wide-spread throughout the world, practical problems will clearly arise in regard to the prevention of physical interference between space vehicles, particularly rockets, and conventional aircraft. The latter are already employed in great numbers across the earth and in many areas air traffic is already congested. It was considered that Governments could give early attention to the problem of interference between aircraft and space vehicles and that technical studies could usefully be undertaken, if necessary with the assistance of competent specialized agencies.

E. Identification and registration of space vehicles and co-ordination of launchings

17. It is expected that the number of space vehicles will progressively increase. In the course of time, their numbers may become very large. This indicates the necessity of providing suitable means for identifying individual space vehicles. Such identification of space vehicles could be obtained by agreement on an allocation of individual call-signs to these vehicles; the call-signs could be emitted at stipulated regular intervals, at least until identification by other means had been established. Another means of identification is by orbital or transit characteristics of space vehicles.

18. As part of the problem of identification, there arises the question of placing suitable markings on space vehicles so that, particularly in the event of their return to earth, they may be readily identified.

19. Identification would be facilitated by a system of registration of the launchings of space vehicles, their call-signs, markings and current orbital and transit characteristics. Registration would also serve a number of other useful purposes. For one example, one serious problem is the potential overloading of tracking facilities. Registration of launchings would help to avoid this. Registration might also afford a convenient means for the notification of launchings to other States, thus enabling them to make appropriate distinctions between the space vehicles so notified and other objects, and to take appropriate measures to protect their interests if necessary.

20. A further measure, beyond registration, would be agreement on the co-ordination of launchings.

F. Re-entry and landing of space vehicles

21. Problems of re-entry and landing of space vehicles will exist both with respect to unmanned space vehicles and later with respect to manned vehicles of exploration. Where space vehicles are designed for re-entry and return, it will be appropriate for the launching State to enter into suitable arrangements with the State on whose territory the space vehicle is intended to land and other States whose air space may be entered during descent. Recognizing, moreover, that such landings may occur through accident, mistake or distress, members of the Committee called attention to the desirability of the conclusion of multilateral agreements concerning re-entry and landing, such agreements to contain suitable undertakings on co-operation and appropriate provisions on procedures. Among the subjects that might be covered by such agreements would be the return to the launching State of the vehicle itself and—in the case of a manned vehicle—provision for the speedy return of personnel.

22. It was also considered that certain substantive rules of international law already exist concerning rights and duties with respect to aircraft and airmen landing on foreign territory through accident, mistake or distress. The opinion was expressed that such rules might be applied in the event of similar landings of space vehicles.

III. OTHER PROBLEMS

A. Question of determining where outer space begins

23. Under the terms of existing international conventions and customary international law, States have complete and exclusive sovereignty in the air space above their territories and territorial waters. The concurrent existence of a region in space which is not subject to the same régime raises such questions as where air space ends and where outer space begins. It was noted that these limits do not necessarily coincide. While they have been much discussed in scholarly writing, there is no consensus among publicists concerning the location of these limits.

24. A view was expressed that it might eventually prove essential to determine these limits. The Committee reviewed a number of possibilities in this connexion, including those based upon the physical characteristics of air and of aircraft. The difficulties involved were agreed to be great. An authoritative answer to the problem at this time would require an international agreement, and the opinion

was expressed that such an agreement now, based on current knowledge and experience, would be premature. It was considered that, in the absence of an express agreement, further experience might lead to the acceptance of precise limits through a rule of customary law.

25. In the absence of a precise demarcation, another possible approach would be to set tentatively, on the basis of present experience and knowledge, a range within which the limits of air space and outer space would be assumed to lie. It was suggested that an approach of this kind should avoid a boundary so low as to interfere with existing aviation régimes or so high as unreasonably to fetter activities connected with the use and exploration of outer space.

26. There was also discussion as to whether or not further experience might suggest a different approach, namely, the desirability of basing the legal régime governing outer space activities primarily on the nature and type of particular space activities.

27. One development might be the conclusion of intergovernmental agreements, as necessary, to govern activities sufficiently close to the earth's surface and bearing such a special relationship to particular States as to call for their consent. Each such agreement could contain appropriate provisions as to the permissibility of a given activity by reference not only to altitude and "vertical" position but also to trajectory, flight mission, known or referred instrumentation, and other functional characteristics of the vehicle or object in question.

28. It was generally believed that the determination of precise limits for air space and outer space did not present a legal problem calling for priority consideration at this moment. The Committee noted that the solution of the problems which it had identified as susceptible of priority treatment was not dependent upon the establishment of such limits.

B. Protection of public health and safety: safeguards against contamination of or from outer space

29. The Committee took note of the apprehensions that have been expressed that activities in outer space might bring to those regions, by inadvertence, living or other matter from the earth capable of interfering with orderly scientific research. It was agreed that further study should be encouraged under appropriate auspices to specify the types of risks, the gravity of dangers, and the technical possibility, as well as the cost, of preventive measures. Such a study should also cover safeguards against similar contamination of the earth as a result of space activities as well as protection against other hazards to health and safety that might be created by the

carrying out of programmes to explore outer space. These studies could be undertaken with a view to the possible formulation of appropriate international standards.

C. Questions relating to exploration of celestial bodies

30. The Committee was of the view that serious problems could arise if States claimed, on one ground or another, exclusive rights over all or part of a celestial body. One suggestion was that celestial bodies are incapable of appropriation to national sovereignty. Another suggestion was that the exploration and exploitation of celestial bodies should be carried out exclusively for the benefit of all mankind. It was also suggested that some form of international administration over celestial bodies might be adopted.

31. The Committee noted that, while scientific programmes envisaged relatively early exploration of celestial bodies, human settlement and extensive exploitation of resources were not likely in the near future. For this reason the Committee believed that problems relating to the settlement and exploitation of celestial bodies did not require priority treatment.

D. Avoidance of interference among space vehicles

32. It was agreed that, apart from problems of communications and overloading of tracking facilities, there was for the present little danger of interference of space vehicles with each other. It was pointed out that this situation might change in time, particularly if vehicles in space are used extensively for either global or interplanetary travel. There was discussion about the possible relevance to space travel of rules and experience developed in relation to air traffic. It was decided that more scientific information would be needed before rules could be drafted.

E. Additional questions raising legal problems

33. The Committee recognized that various other technical developments would probably call for legal arrangements and regulation. Particular reference was made in this connexion to meteorological activities in outer space which may require international measures to insure maximum effectiveness.

ANNEX 21

Union of Soviet Socialist Republics: Draft Declaration of the Basic Principles Governing the Activities of States Pertaining to the Exploration and Use of Outer Space. September 10, 1962.¹

¹ U.N. Doc. A/AC.105/L.2; U.N. Doc. A/5181. Annex III.

The Governments of the States whose representatives have signed this Declaration,

Inspired by the great prospects opening up before mankind as a result of penetration into outer space,

Recognizing that the peoples of all the countries of the world are interested in the conquest of outer space,

Desiring to promote broad international co-operation in the exploration and use of outer space for peaceful purposes,

Taking into consideration United Nations General Assembly resolution 1721 (XVI) approved unanimously by all the States Members of the United Nations,

Solemnly declare that in the exploration and use of outer space they will be guided by the following principles:

1. The exploration and use of outer space shall be carried out for the benefit and in the interests of the whole of mankind.
2. Outer space and celestial bodies are free for exploration and use by all States; no State may claim sovereignty over outer space and celestial bodies.
3. All States have equal rights to explore and use outer space.
4. The activities of States pertaining to the conquest of outer space shall be carried out in accordance with the principles of the United Nations Charter and with other generally recognized principles of international law in the interests of developing friendly relations among nations and of maintaining international peace and security.
5. Scientific and technological advances shall be applied in outer space in the interests of a better understanding among nations and the promotion of broad international co-operation among States; the use of outer space for propagating war, national or racial hatred or enmity between nations shall be prohibited.
6. Co-operation and mutual assistance in the conquest of outer space shall be a duty incumbent upon all States; the implementation of any measures that might in any way hinder the exploration or use of outer space for peaceful purposes by other countries shall be permitted only after prior discussion of and agreement upon such measures between the countries concerned.
7. All activities of any kind pertaining to the exploration and use of outer space shall be carried out solely and exclusively by States; the sovereign rights of States to the objects they launch into outer space shall be retained by them.
8. The use of artificial satellites for the collection of intelligence information in the territory of foreign States is incompatible with the objectives of mankind in its conquest of outer space.

9. States shall regard all astronauts as envoys of mankind in outer space and shall render all possible assistance to spaceships and their crews which may make an emergency landing on the territory of a foreign State or on the high seas; spaceships, satellites and capsules found beyond the limits of the launching State shall be returned to that State.

The Governments of the States signatories to this Declaration call upon all the States of the world to accede to it.

ANNEX 22

Summary of Understandings between A. A. Blagonravov of the Union of Soviet Socialist Republics and Hugh L. Dryden of the United States of America, Geneva, Switzerland, June 8, 1962.¹

Geneva, Switzerland
June 8, 1962

The representatives of the Union of Soviet Socialist Republics and the United States of America have conducted discussions on the question of cooperation in the use of outer space for peaceful purposes during the period 29 May to 8 June, 1962. The agreed upon recommendations are described in the attached documents, the texts of which have been checked by us in both languages and are identical.

A. A. Blagonravov

Hugh L. Dryden

SUMMARY OF UNDERSTANDINGS

Introduction

Following the exchange of views between Nikita S. Khrushchev, Chairman of the Council of Ministers of the Union of Soviet Socialist Republics, and John F. Kennedy, President of the United States of America, regarding cooperation in the exploration and use of space for peaceful purposes, the USSR and U.S. representatives designated for the purpose have discussed in some detail the possibilities of cooperation in meteorology, a world geomagnetic survey, and satellite telecommunications.

In the field of meteorology, it is important that the two satellite launching nations contribute their capabilities toward the establishment of a global weather satellite system for the benefit of other nations.

The compilation of a map of the magnetic field of the earth with the aid of satellites is extremely important both for the further suc-

¹ U.N. Doc. A/C.1/880.

cessful exploration of space and for advancing the science of earth magnetism.

Telecommunications by means of satellites is expected to lead to a considerable improvement of communications facilities all over the world and can be a most important contribution to the extension of contacts and friendship among nations. Communication satellites can also be used for domestic needs within a single country.

The USSR and U.S. representatives have arrived at the following understanding which they agree to refer to their governments for consideration.

Meteorology

It is agreed that this program falls naturally into two stages, an experimental and an operational stage.

The first stage will extend approximately from the present time through 1963-64 during the development of experimental weather satellites by both the USSR and the U.S.

In this first stage, the two countries will arrange for the establishment of communication links adequate for the transfer, from each to the other, of the data gathered by each nation from its own experimental meteorological satellites. These communication links would connect the World Weather Centers at Moscow and Washington. A Joint Working Group of technical experts will meet in October 1962 to decide upon suitable communication links to be established with due regard to the sharing of costs and the interests of other nations.

The Joint Working Group will also establish the criteria for the two-way transfer of satellite data over such links, with the understanding that such transfers will include selected cloud-cover pictures, especially related to storms, vortices, fronts, and the generation of these phenomena, with geographical coordinates provided for all pictures selected, together with nephanalyses based upon the data as a whole. The Joint Working Group will agree upon a date for initiating the two-way transfer of such data, designating this date with due regard for the readiness of the communication links and the readiness of the USSR and the U.S. to provide data of approximately equivalent interest. Data should be exchanged as quickly as possible. The same communication links would be used to exchange weather charts, diagrams, vertical cross-sections, and the material required for solving the problems of world weather, including the extension of prediction periods. Coordinated research efforts should be directed toward these goals.

The second stage of the meteorological satellite program will begin approximately in 1964-65 and will apply to the coordinated launchings by the two nations of a system of operational weather satellites. In order to prepare adequately and in a timely fashion for such coordinated launchings, a second Joint Working Group will meet in March 1963 to determine mutually agreeable launching schedules for the operational satellites, the numbers of such satellites, their orbits, and the comparability (to the degree desirable) of the characteristics of their sensors and the data to be obtained.

These discussions as to satellite characteristics, numbers, and orbits shall be made with due consideration of recommendations of the World Meteorological Organization (WMO) with regard to the objectives of weather-data acquisition by satellites for both operations and research.

The two-way transfer of data during the second stage shall be determined by the two nations and shall be made on a real-time basis. This transfer and the wider dissemination of such data to other nations will proceed with full consideration of the recommendations and procedures of the World Meteorological Organization (WMO). Nephanalyses, pictures of cloud cover, and processed data on radiation fluxes will be exchanged mutually.

World Geomagnetic Survey

It was agreed to be useful to arrange for a joint effort in this field by the coordinated launching of two artificial earth satellites equipped with magnetometers during the period of the International Year of the Quiet Sun. These two satellites will be launched, one by the USSR and the other by the U.S., on different mutually agreed orbits. The period before the International Year of the Quiet Sun will be used by both parties (the USSR and the U.S.) to continue magnetic measurements in space in accordance with national work programs, with mutual exchange of processed data of the magnetic measurements.

The representatives of the USSR and the U.S. agreed that it would be desirable to establish a Joint Working Group, consisting of USSR and U.S. specialists, for the preliminary consideration of the scientific and technical aspects of the compilation of a map of the magnetic field of the earth with the aid of artificial earth satellites. In particular, the Joint Working Group is to make recommendations on the shape of the orbits, their angle of inclination to the equator, the period during which the satellites are to be operated, the necessary accuracy of measurements, the type of magnetometers

to be used on the satellites, the methods of processing and analyzing the data obtained, the methods of correcting them, and so on.

Conducting its work, the Joint Working Group will take into consideration any possible recommendations on this question of the Scientific and Technical Subcommittee of the UN Committee on the Peaceful Uses of Outer Space.

The parties agreed that it would be desirable for the members of this Joint Working Group to be appointed by each side as soon as technically possible to begin work on the problems placed before the group, by correspondence and by subsequent meetings, if necessary.

The parties recognized that data obtained in earth magnetic observatories were of particularly great importance for the successful compilation of a map of the magnetic field of the earth with the aid of the artificial earth satellites. They therefore agreed to make efforts to arrange, through World Data Centers A and B, for a prompt exchange of standard magnetograms from earth observatories, and to arrange that these magnetograms contain all the data required for their use for analyzing the data acquired by satellites. Each side agreed to use its influence with non-governmental organizations (such as the International Committee on Geophysics (CIG), the Committee on Space Research (COSPAR), and others) to expedite the transmission to World Data Centers A and B of the necessary earth magnetic data from third countries cooperating with the USSR and U.S.

Satellite Telecommunications

Recognizing the role of the International Telecommunications Union and the importance of the establishment of bilateral cooperation between the USSR and the U.S. in the exploration and peaceful use of outer space, we submit the following recommendations:

In 1962-63 the USSR and the U.S. agree to cooperate in experiments on communication by means of the U.S. satellite "Echo A-12".

We agree to give further consideration to the possibilities of cooperation in joint experiments using active satellites that may be launched by either nation in the future, including the mutual exchange of information on the results of such experiments, and to resume discussions of these possibilities at our next series of meetings.

Among the problems which should be discussed at the following meetings is that of the preparation for the working out with other nations of a project for an experimental global system of space communications with due regard to the recommendations of the ITU.

Conclusion

The recommendations proposed at the present stage of the bilateral discussions by the representatives of the USSR and the U.S. have a preliminary character and will be presented by both parties to their governments through appropriate agencies for final consideration. If either of the two parties finds it necessary to make any corrections, additions, or deletions in the text of the prepared documents, then all of these changes should be made within the period of two months from this date by correspondence, which will be sent to the following address in Moscow:

Academy of Sciences of the USSR
 Leninsk: Prospekt 14
 Moscow
 USSR

And to the following address in Washington:

National Aeronautics and Space Administration
 Attention: Dr. Hugh L. Dryden
 400 Maryland Avenue, S.W.
 Washington 25, D.C., U.S.A.

Geneva, June 8, 1962

APPENDIX A

The following persons participated in the discussions:

USSR Representatives

Academician A. A. Blagonravov
 Deputy Minister I. V. Klokov
 Professor Y. D. Kalinin
 Professor V. A. Bugaev
 Mr. Y. A. Barinov
 Mr. G. S. Stashevsky

U.S. Representatives

Dr. Hugh L. Dryden
 Professor Donald F. Hornig
 Dr. John W. Townsend, Jr.

Other U.S. Consultants

Mr. Arnold W. Frutkin
 Mr. Howard Furnas
 Dr. Richard W. Porter
 Dr. Harry Wexler

Dr. James P. Heppner
 Mr. Philip H. Valdes
 Congressman George P. Miller
 Congressman James G. Fulton

U.S. NOTE OF 29 AUGUST 1962

The embassy of the United States of America presents its compliments to the Ministry of Foreign Affairs of the USSR and has the honor to refer to the technical agreement reached in Geneva on June 8, 1962, by representatives of the USSR and the United States of America, headed by Academician Blagonravov and Dr. Hugh Dryden on cooperation in space activities.

The Embassy recalls that the agreement of June 8 took the form of recommendations submitted to the two governments for final consideration, and specified a period of two months during which either side could propose changes in the agreement. On July 9, 1962, Dr. Dryden wrote to Academician Blagonravov informing him that as United States technical representative he had no changes to propose on behalf of the United States of America.

As the period of two months has elapsed and as Academician Blagonravov has not proposed changes, the Government of the United States of America therefore proposed to the Government of the Union of Soviet Socialist Republics an exchange of notes referring to and confirming the agreement of June 8. This exchange could take place in Moscow or Washington, as the Government of the Union of Soviet Socialist Republics prefers.

NO. 49/USA

The Ministry of Foreign Affairs of the USSR presents its compliments to the Embassy of the USA and in connection with the Embassy's note No. 216 of August 29, 1962, has the honor to state the following.

In the course of a meeting at Geneva of USA and USSR scientists which took place in June, 1962, technical recommendations on several questions of cooperation in the field of the peaceful research of the use of outer space were agreed upon between the Academy of Sciences of the USSR and the National Aeronautics and Space Administration of the USA.

On September 13, 1962, Academician A.A. Blagonravov, during the course of his stay in New York for a session of the UN Committee on the use of space for peaceful purposes, informed NASA representative, Mr. A. Frutkin of the approval by the Soviet side of the aforementioned recommendations of the scientists regarding outer space.

The President of the Academy of Sciences of the USSR is sending the Director of NASA appropriate official notification on this question.

MOSCOW

October 12, 1962

October 12, 1962

Dear Mr. Webb:

Referring to the agreement on cooperation in the peaceful exploration and uses of outer space which was reached during the meetings between delegations of Soviet and American scientists, headed by Dr. Hugh Dryden and Academician A. A. Blagonravov, in June of 1962, the Academy of Sciences of the USSR notes that neither side has proposed within the specified period of time any changes or additions to the text of the recommendations as agreed in Geneva.

In view of this, we consider the above named agreement to have thus entered into force and are informing you herewith that Soviet scientists are prepared to commence its implementation.

The Academy of Sciences of the USSR expresses the hope that the agreement on cooperation in the peaceful exploration and use of outer space will provide a good beginning for the further development and expansion of cooperation between Soviet and American scientists in this noble task for the sake of scientific progress and the strengthening of peace on earth.

Respectfully yours,
 M. V. Keldysh
 President,
 Academy of Sciences of
 the USSR

October 30, 1962

Dear President Keldysh:

This will acknowledge your letter of October 12, 1962, expressing the desire of the USSR Academy of Sciences to commence implementation of the agreement reached in Geneva last June by Dr. Dryden and Academician Blagonravov. Since our two governments have now confirmed this agreement, I believe such a step to be appropriate and desirable.

I am asking Dr. Dryden to communicate with Academician Blagonravov in order to establish mutually agreeable dates for convening working groups to begin this agreed cooperative program.

I hope, with you, that this first step will be a fruitful one, and that it will lead to other such steps.

Sincerely yours,
 James E. Webb

APPENDIX B

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